MINING CONGRESS JOURNAL

MARCH, 1938

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ADVANCED DESIGN MARKS THIS NEW LINK-BELT *Coal Crusher*

● New, but thoughly tested by many months of actual service in the field, the type "C", 2-roll, spring-relief crusher is ready to contribute to your profits by reducing crushing costs and providing more accurate sizing. The large capacity with reduced degradation, inherent in two-roll crushers, and the ease of adjustability for regulating the size of the product characteristic of single-roll crushers are combined in this one sturdy, compact unit.

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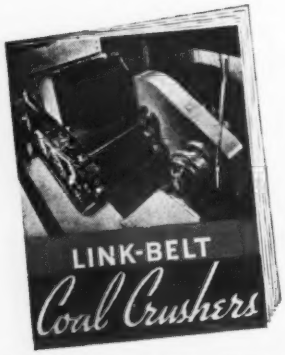

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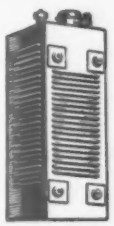
Ask for No. 1654. Address Link-Belt Company, Chicago, Pittsburgh, Wilkes-Barre, Huntington, Cleveland, St. Louis, Denver and Seattle.

7287

LINK-BELT
Coal Preparation Equipment

He's no longer in touch with DEATH

IN an older type mine, this man carrying drill steel would have been flirting with death or serious injury. If it struck an exposed trolley wire it was too bad for Charlie—and production would have slowed up a lot while they hauled Charlie out. But today, Charlie's employers have realized that trolley wire has served its time—that storage battery locomotives not only eliminate the hazards of trolley wire, its expensive maintenance and its inflexibility, but that they actually cut down power costs...because...



Storage batteries are usually charged between shifts, when the hoists aren't working and the other power demands are light. Storage battery locomotives can go places where trolley locomotives can't...don't have to quit when shifting ground knocks the trolley wire or track bonding out of kilter...give even, steady power. And of all storage batteries, that invented by Thomas A. Edison is preferred.

The steel-alkaline battery is rugged both in construction and electrochemically. It can accept high charge rates, stand idleness, take rough treatment—and withal deliver 2 to 5 times the life of ordinary batteries and at the lowest maintenance costs. Send for data.

EDISON STORAGE BATTERY

DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, NEW JERSEY

SAVED

$7.95 cu.yd.

A prominent mining company reduced their loading costs alone by $7.95 a cubic yard with Sullivan Three Drum Scraper Haulers.

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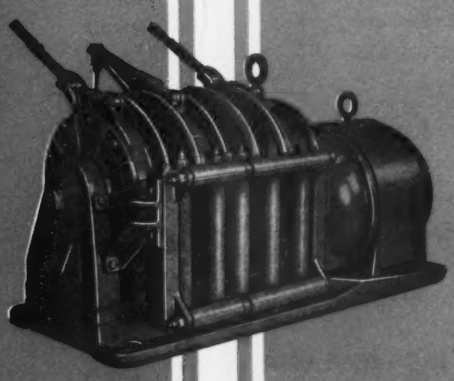
Hand Loading	Scraper Loading
Six Men Hand Loading at The Same Working Face. Cost $17.25 per Cu. Yard.	Depreciation, Interest, Maintenance, Power and Labor. Cost $9.30 per Cu. Yard.

NET SAVINGS $7.95 PER CU. YD. LOADED



SULLIVAN Three Drum SCRAPER HAULERS will save you money over hand loading costs and eliminate tramming as well. If you have a loading problem in your stopes or other wide workings, write for Form 909.

SULLIVAN
MACHINERY COMPANY

CLAREMONT, N. H.

"Cut underground haulage costs? That's easy . . . install Exide-Ironclad Batteries"

IT is often easier to make claims for lower costs than it is to back them up. But in the case of Exide-Ironclad Batteries, their record speaks for itself. They are the most widely used batteries in underground haulage service today.

This in itself is significant. And the reports of users agree on the advantages these batteries offer. Five and more years of service without a cent of repairs is a common experience.

Long life with minimum maintenance means real economy. Add to that the type of performance you consistently get with these batteries, and it is easy to see why users are enthusiastic. For Exide-Ironclads have abundant power to handle the toughest job. They speed up the service. They are dependable.

For mining, quarrying or tunneling, for use in heavy locomotives or trammers, you will find Exide-Ironclads the surest way to improve haulage service and cut costs. Write for free booklet, "The Storage Battery Locomotive for Underground Haulage."

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BATTERIES
With Exide **MIPOR** Separators
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THE ELECTRIC STORAGE BATTERY CO.
Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

ISLAND CREEK

again selects

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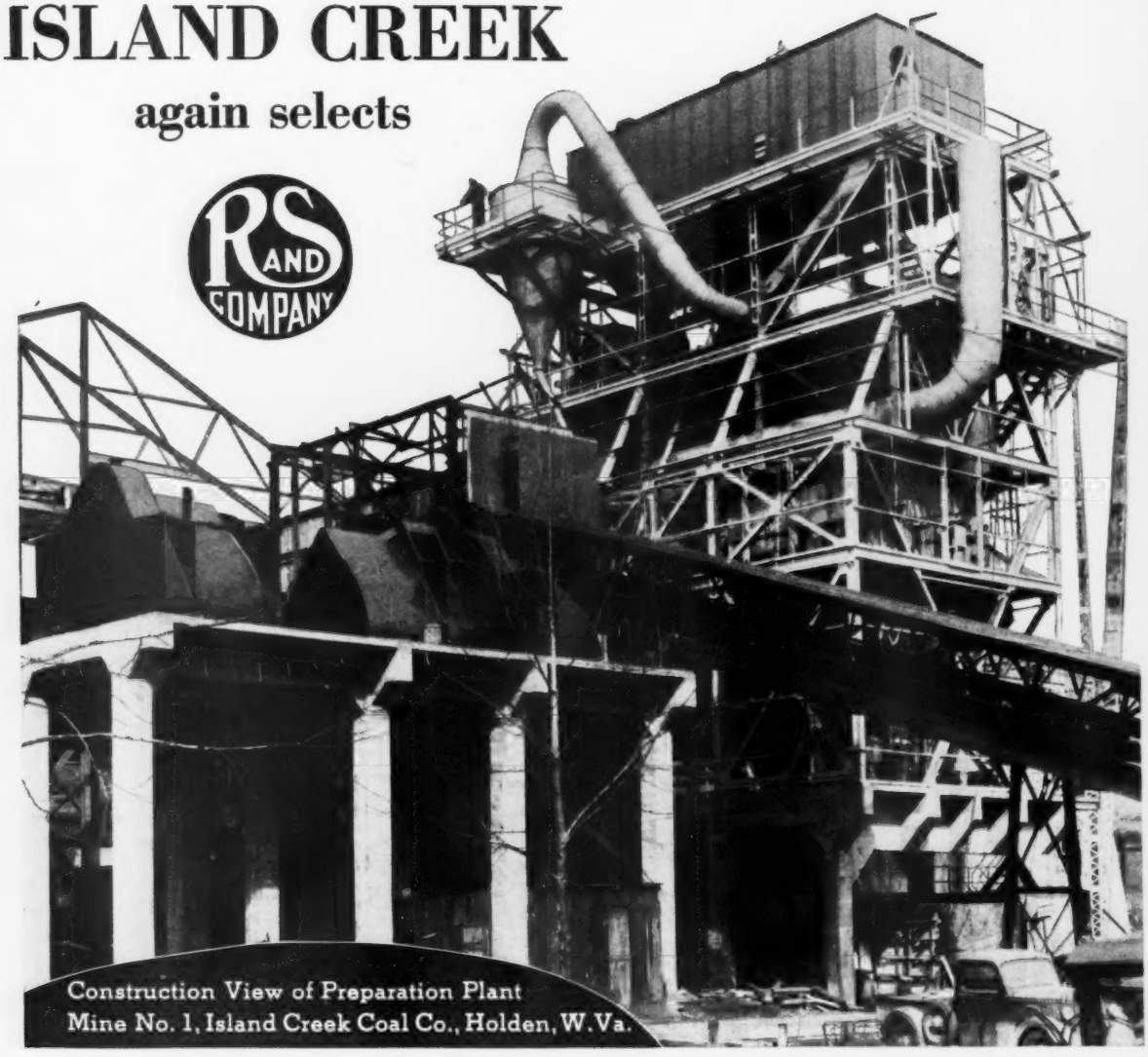

Construction View of Preparation Plant
Mine No. 1, Island Creek Coal Co., Holden, W.Va.

IN 1930 Island Creek installed a Marcus Screen tipple and Hydro-Separator cleaning plant at the No. 3 mine of the Pond Creek Pocahontas Coal Company, Bartley, West Virginia.

Since then the Island Creek Coal Company has installed a number of preparation plants of various makes. NOW they are back to the improved Marcus screens, Hydro-Separators and Stump Air-Flow coal cleaners at the new preparation plant at their No. 1 mine.

Capacity of this latest preparation plant is 600 tons per hour run of mine coal—*Marcus Screens* on raw and washed coal preparation; *Hydro-Separators* washing 4" x ¼" and *Stump Air-Flows* on ¼" x 0 fines.

100% DUST COLLECTION . . . NO SLUDGE LOSSES . . . NO FINE COAL LOST TO ATMOSPHERE

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MINING CONGRESS JOURNAL

Vol. 24 MARCH, 1938 No. 3

Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress

Published monthly. Yearly subscription, United States and Canada, $2.00. Foreign, $4.00. Single copies, $0.20. Entered as Second Class Mail Matter, January 30, 1915, at the Post Office at Washington, D. C.

THE AMERICAN MINING CONGRESS
309 Munsey Bldg., Washington, D. C.

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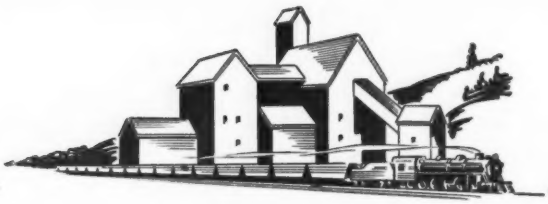


The Conference of Small Business

MADE ridiculous before the public by loud mouthed agitators, who, whether intentionally or not, did everything in their power to destroy the practical work of the Small Business Men's Conference—yet the net result illustrates the ability of a representative assembly to register its views and to reach practical results.

The two first things demanded by the resolutions, as originally formulated, were:

1. Abandonment of efforts aimed at Federal regulation of wages and hours.
2. Amendment or repeal of the Wagner Labor Relations Act.

These were in fact but one demand: viz., for a restoration of the right to bargain—the right of the individual to bargain, collectively or otherwise, as he may choose.

Stated in other words, it is the right of every citizen to sell his service or the product of his service to whomsoever he desires upon such terms as are satisfactory or acceptable to him. Any denial of this right is a curtailment of that freedom which was and still should be the right of every American citizen.

This demand does not deny the right of collective bargaining—but it does deny the right to use collective extortion against employers. It does demand that a majority shall not be given domination over those who are not willing to surrender to any organization the control of their right to earn a living.

The sacrifice of individual liberty is a supreme sacrifice which opens a fertile field of problems—each leading to further confusion.

If my right to earn a living for my family is primarily controlled by a labor union rather than by my Government then my allegiance must be first to that labor union. If to the labor union—then which branch must I follow?

With this question determined, the supreme problem of deciding whether it is my duty to support my family or to follow a strike order and leave my family to want and suffering becomes vital.

Every movement away from fundamental principles leads to new problems of most vital significance to the individual and each to a sacrifice of the rights and privileges for which our forefathers fought and died.

Other resolutions approved by the conference of small business men were important, but none were so far reaching as those which affect the right of every individual to bargain for himself. No one will question the right to collective bargaining; but many will, and all should defend the right of every individual to bargain either collectively or individually as he may elect.

The proposal to fix wage levels by fiat of the Federal Government is almost as foolish as the proposal to fix the price of farm products by the same agency.

Unionism may control the supply of labor but no human power can control the output of agriculture. In both cases, however, the demand for the product cannot be controlled.

An understanding of these basic principles led the conference of small business men to make recommendations which if adopted would make possible a much earlier return to national prosperity.

A JOURNAL FOR THE ENTIRE MINING INDUSTRY—PUBLISHED BY THE AMERICAN MINING CONGRESS

MINING CONGRESS JOURNAL

Vol. 24 MARCH, 1938 No. 3

Richard J. Lund, Editor

"THE TAX WITHOUT A FRIEND"

FROM three important sectors of American industrial life—from big business, from little business, and finally from labor as represented by the A. F. of L.—have come recent statements advocating repeal of the undistributed profits tax. This is a pregnant manifestation of the mutuality of interest earnestly seeking to have this abortive provision stricken from our income tax law immediately.

For a time, when so-called "big business" was thought to be leading the repeal fight, the charge was repeatedly made that "special interests" or "economic royalists" were again trying to foist their selfish will on the masses.

However, when the shoe began to pinch during the latter part of 1937, those voicing their opposition grew in number and scope. It began to be strikingly clear that the downturn in business was more than a slight recession, and that the undistributed profits tax was one of the major causes of the loss of business confidence—a most important factor in bringing about the slump. This is rather a positive repudiation of claims advanced by proponents of the original legislation that it would tend to relieve cyclic depressions.

With unemployment rapidly nose diving, "little business" and finally labor have come out strongly for its repeal. These developments effectively dispose of the charge that "special interests" are the sole opponents of the legislation.

The plight of "little business", with relatively small surpluses previously accumulated to tide over hard times, is, on the surface, more serious than that of larger concerns. This was soon recognized in the proposals to eliminate provisions of the tax as applying to companies with low incomes. It now is apparent to labor, depending in large part for employment upon bigger industries, that "what hurts business hurts them."

The levy on undistributed profits has aptly been termed, "the tax without a friend." It should be repealed outright, with greatest possible dispatch, without any face-saving for the authors and those now endeavoring to maintain certain features of the ill-conceived legislation.

A THREAT TO MINING

INCLUSION of a number of mineral commodities among the items to be considered in pending negotiations for a trade agreement with the United Kingdom and Canada constitutes an alarming threat to the industries engaged in their extraction and processing in this country. As an outstanding example, and without minimizing the importance of other minerals involved, any reduction in the moderate but vitally necessary duties on the lead and zinc items on the list would be a serious blow to our mining industry.

Any action tending to lower prices for these metals or ores in the United States would almost certainly result in loss of employment for many thousands of men; lower the tax revenues of Federal, State and local governments; seriously jeopardize the income of many more tens of thousands of people dependent on the welfare of the mining industry; and actually threaten seriously to make the United States dependent in part on foreign countries for supplies of these metals—termed by the War Department as "critical minerals"—thus destroying the self-sufficiency in these materials built up by means of our moderate tariff protection.

A plentiful supply of relevant factual information has been submitted to members of Congress and the State Department, and there will be no let-up in the fight to maintain the vitally necessary protection now afforded to American mining.

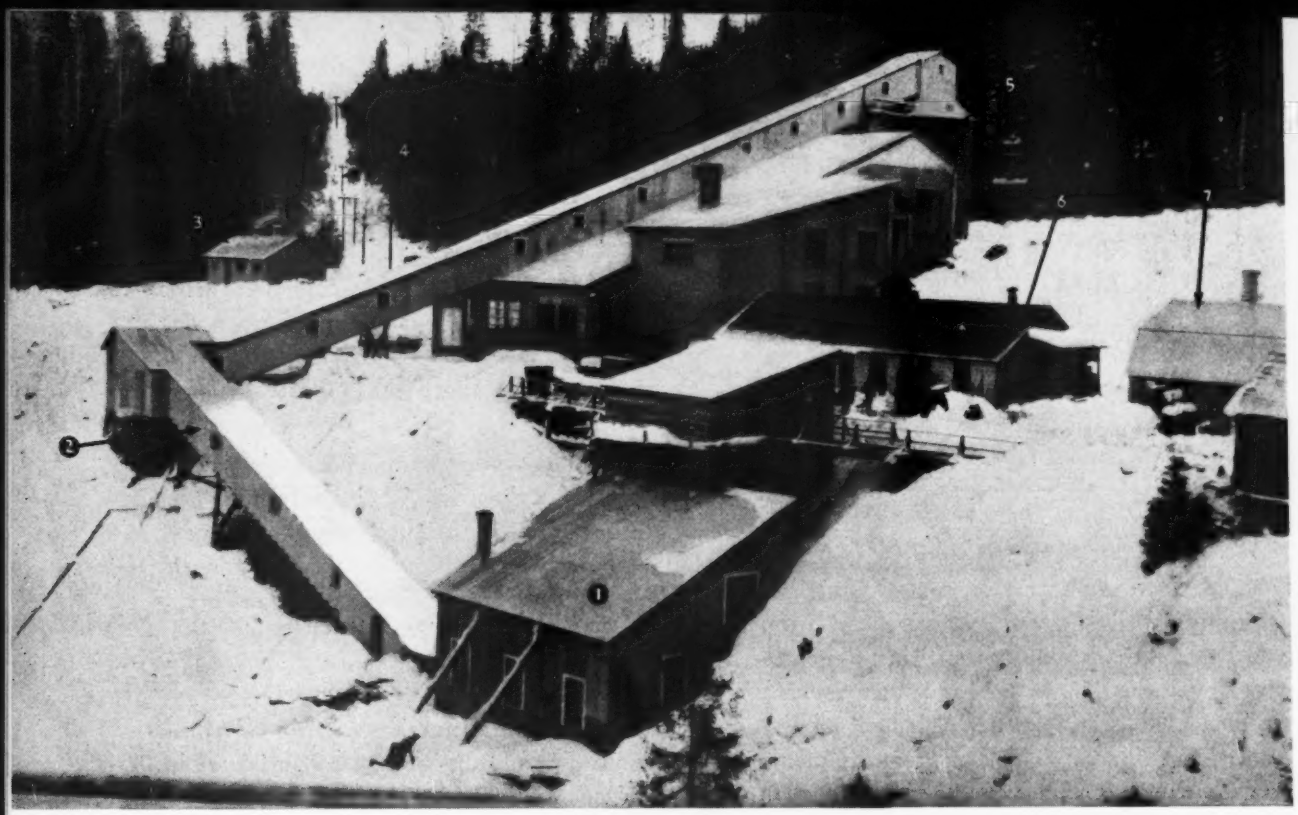


Fig. 1. Pend Oreille mill before installation of warehouse, No. 2 ore bin, and cyanide plants. 1, crusher house; 2, conveyor to bins; 3, assay office; 4, power line from Pend Oreille power house; 5, ore bin; 6, blacksmith shop; 7, dry house

MINING and MILLING at PEND OREILLE†

- ***Washington Operation, Now Producing About 800 Tons Daily, an Outstanding Recent Lead-Zinc Development***

By CHARLES A. R. LAMBLY

General Superintendent
Pend Oreille Mines & Metals Company

THE Pend Oreille Mines & Metals Company is located in what is called the Metaline mining district in the extreme northeast portion of the State of Washington. The town of Metaline Falls is located about 110 miles due north of Spokane and only 11 miles south of the Canadian border. The Pend Oreille operation is located two miles northeast of Metaline Falls.

Geology

The Metaline district's geological structures have not been thoroughly studied and reported on. Generalized district reports have been made by state geologists in the past, and a detailed study was made during 1936 and 1937 by the U. S. G. S. under Dr. C. F. Parks, Jr. Dr. Parks completed his field work in the fall of 1937, and his report should be published within the next two years. Mining companies to date have not had men on any detailed field work other than very limited areas around their respective mines.

The geology of the area, in brief, is as follows: Metamorphic rocks, largely of sedimentary origin, have been intruded by a large granite batholith, from which may have emanated the mineralizing solutions which gave rise to the ore deposits. Dolomitic limestone is the prevailing rock in the district, with some shales and quartzites. These rocks have been uptilted, sheared and faulted, and the ore deposits occur as replacements in the brecciated limestone along or near fault or shear zones.

The Pend Oreille ore body has an average metal content of about 7 percent zinc and 3 percent lead. The ore zone is located at the bottom of a siliceous magnesium limestone bed which varies in thickness from 100 to 200 ft. The commercial ore horizon through this bed varies from 10 to 100 ft. in thickness, and is badly broken by faulting and folding. The footwall of the ore zone is a massive

† This interesting subject was also presented by Mr. Lambly to the Eleventh Annual Mining Institute of the College of Mines, University of Washington, Seattle, January 21, 1938.

gray limestone, and the hanging wall or back is the remainder of the magnesium limestone and carries traces of zinc. The magnesium lime bed is generally capped with 5 to 75 ft. of shale. As a whole, the area over the ore zone is covered with overburden varying in depth from 10 to 100 ft.

The Pend Oreille ore body covers an area approximately 2,000 ft. long by 1,000 ft. wide, and has a general northwest strike with dip to the northeast. The general dip varies from five to twenty degrees, but in some places it is greatly increased by folding and faulting.

Within the ore body large blocks of waste occur. These waste areas are very irregular in size, but some run up to lengths of 50 ft. A majority of these waste blocks are used as pillars, and generally do not interfere with mining. The smaller blocks, less than five feet in size, are taken as they occur in the faces and are sent to the mill as mill feed.

Up to the end of 1936 the mill feed averaged approximately 8 percent zinc and 2 percent lead, but during the last year the mill feed has averaged approximately 4 percent lead and 6 percent zinc. It has not been determined as yet whether this will be a permanent condition or not. Generally speaking, throughout the mine the lead occurs near the top of the ore bodies, and for the last year a majority of the work has been carried on in the tops of the ore section. This condition may change back to the 8 percent zinc and the 2 percent lead when more stopes are down into the middle and bottoms of the ore sections.

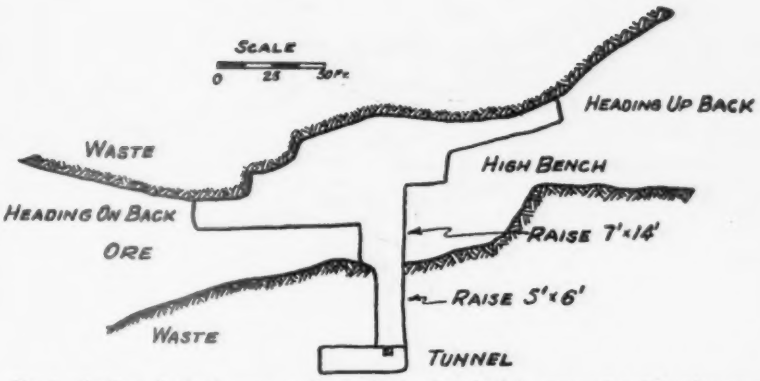


Fig. 2. Section of raise in waste and ore, showing how back is prepared and benches are started

The footwall of the ore body is very irregular and changes elevation as much as 100 ft. vertically in a distance of 100 ft. horizontally, a condition brought about by the severe faulting. The variation in thickness of the ore zone, mentioned above, is brought about in part by faulting and folding.

THE MINE

Method of Development

Due to these conditions great care must be taken in the development program. At the time being, the mine is being worked from the 500 ft. adit tunnel and from a 200 ft. shaft to the 700 ft. level. The adit tunnel was driven 800 ft. in waste and 500 ft. in commercial or near commercial ore. The shaft is located 800 ft. north of the portal of the 500 ft. adit tunnel, and is 1,300 ft. east of the end of the 500 ft. adit tunnel. This shaft was sunk to the footwall of the ore bodies, and drifts were extended along the strike, and a flat raise was pushed through to the 500 ft. level.

Great care is taken to try and have all development tunnels and raises within the ore body, thus saving a great deal of expense in the handling of waste. Stopes cannot be definitely plotted or planned out from drilling information, and therefore raises to the ore bodies must be planned from day to day as conditions demand in the mine.

In opening a new section a raise is driven from the tunnel to the top of the ore body. This raise is generally 7 by 14 ft. so that substantial tonnage may be broken at a reasonable cost. When the raise hits the hanging wall, sideswiping is started and the back is followed as far as possible in all directions (Fig. 2). When a raise is driven in waste the size is reduced to 5 by 6 ft. This round is pulled with a burn-cut, giving a minimum amount of waste and maximum footage. When the raise enters ore it is immediately increased to standard size, which is 7 by 14 ft. Tunnels driven in ore are generally carried 7 ft. high and 20 ft. across, but upon entering waste they are reduced to 7 by 5 ft. The large tunnels in ore are much slower to drive for footage, but pay their way by the tonnage of commercial ore produced.

It is very important that the backs be thoroughly cleaned of all ore and loose rocks before the underhand stoping is started. If any backs develop bad conditions after the stoping has started it requires considerable time

Fig. 3. Stopes are usually 50 by 50 ft., but some open up to over 100 ft. in all three dimensions

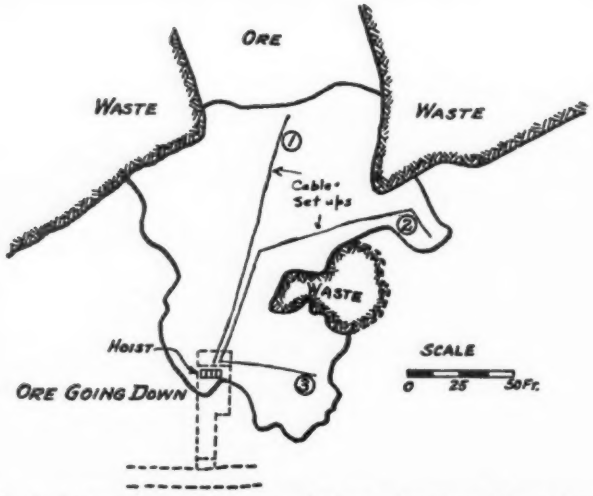


Fig. 4. Stope with one 15 hp. scraper hauler mucking three different faces

and expense to return and pick them down. Stopes generally open up to 50 by 50 ft. (Fig. 3), but some of the larger ones open up to more than 100 ft. in all three dimensions.

Drilling Practice

Mining in the stopes is mostly done with 3½ inch water Leyner drills, mounted on a light ninety pound tripod without weights. High benches are cut so that a machine may drill for two or three shifts before blasting. Two men are used on these machines. Sideswiping is done with water Leyners mounted on vertical bars, which frequently permits two shifts drilling before shooting. The practice of drilling for two or more shifts previous to blasting has resulted in very greatly increased tonnage broken per miner, and this method is followed whenever possible. The tonnage broken by 16 miners is about 800 tons per 24 hours, giving an average of 50 tons per drill shift in the mine. There are 5 miners on development work and 2 on general back scaling work. Including all the 23 miners, the average rock tons broken per miner shift is 35.

The footage drilled per machine shift averages 100 ft. Under the system explained later for directing the miner's work, this footage has been increased 24 percent in 30 days by cutting down the waste time at the start of each shift for the mining crew to prepare the faces.

Scrapers Used for Mucking

After the round has been shot a mucking machine operator, using a Sullivan 15 hp. electric double drum scraper hauler and hoe type scraper, slushes the ore into the chutes. There are 13 mucking machines set up in the stopes operated by 13 mucking machine operators. These men average 800 tons per day to the chutes or an average of over 61 tons per operator shift.

On different levels throughout the mine it is necessary to load the muck into small cars and tram them up 200 ft. to the ore chutes or slushing chutes so that the muck can be moved to the main scrap pocket. We have found that it is cheaper to hand tram muck under certain conditions than to scrape it over the same distance. All tramming is done by the mucking machine operators, who also handle all the development headings, thus reducing the tonnage per operator considerably. Figures 4 and 5 show mucking machine set-ups for slushing from more than one stope and loading into one-ton tram cars. A detailed hoist set-up is illustrated in Fig. 6; scraping into tram cars in Fig 7, and slushing into an ore pocket in Fig. 8.

Hoisting and Haulage

The ore is then slushed to the main ore pocket at the bottom of the shaft or is hand trammed from the different chutes to the same ore pocket. From there the ore is hoisted to the surface with a Sullivan 125 hp. hoist using a two-ton skip. Sixty tons per hour can be handled and hoisted to the surface with ease. On the surface a Plymouth locomotive with 10 two-ton side-dump cars takes the ore 1,000 ft. to the main crusher bins. One man on the locomotive does all loading and dumping, and can move the ore as fast as it is hoisted. The ore that is brought out from the 500 ft. level is loaded from chutes into a three car train pulled by a Little Mancha trammer. The 500 ft. ore is hauled 1,000 ft. or more depending on the stopes from which the ore is taken. The 500 ft. level system can produce 130 tons per shift with ease.

Explosives

At present we are carrying on experiments with a new type of powder called "Geodyne," an ammonia type, made by the Giant Powder Company. The cost is approximately 1¾ cents cheaper per stick and it can be used stick for stick with the type previously used. This effects a considerable saving in the powder consumption and rock costs. The one difficulty is that it cannot be used in up holes or wet holes, but it can be used in a large majority of the stope rounds.

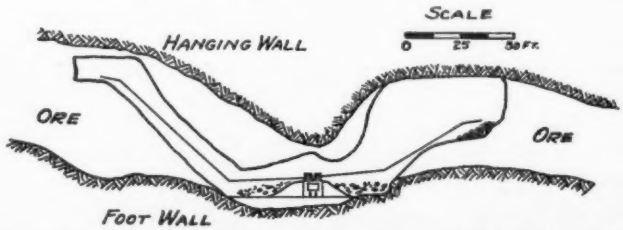


Fig. 5. Scraper hauler set up on timber loader over track, permitting mucking both stopes. This type of installation also allows free passage of car beneath loader so that other chutes may be located on same track

To date our tests have shown that the daily powder costs are reduced on an average of 17 percent; and when it is possible to use the powder throughout the mine for one day, the daily saving will run as high as 35 percent. All powder is ordered at the noon hour and is prepared by one powderman for both shifts. This powder is packed in powder sacks and delivered to the faces by the tramming crews one hour before shooting time. The cutting of the powder is done underground during the loading operation.

Drill Steel

Steel is prepared by two shifts of blacksmiths with a complete set of steel for each shift. The transportation for the steel from the blacksmith shop to the headings requires the installation of small air tuggers and steel slides. On each shift a steel nipper delivers his steel to central points throughout the mine from where the chuck tenders take it to the headings. One and one-quarter inch hollow round steel is used for the water Leyners, and one inch hollow hexagon is used for the stopers and jackhammers. Sullivan Forge and Gardner-Denver steel sharpeners are used.

Compressors

Air is supplied by two Sullivan angle compound compressors of 1,200 cu. ft. capacity each, driven by a Pelton wheel from a 350-ft. head of water. Between the water wheel and one compressor is installed a magnetic coupling and a 16-belt Tex rope pulley to which is connected a 500 KVA generator. When water is available this generator is used to generate power, and when water is short the generator is used as a synchronous motor to drive the compressor. This set-up gives us sufficient power so that if at any time there is a power failure from the main power house, there is no difficulty in keeping the mine dewatered. One man per shift operates the compressor plant.

Mine Personnel

Mr. Berglund is mine superintendent, and has seven shifters under him —one on the 500-ft. level, one on the 700-ft. level, and a mucking or junior shifter on each shift. On the night shift there is an additional man who is head shifter.

The engineering staff consists of three men—one who works continually with Mr. Berglund on mine management; one in charge of development and maps; and one in charge of diamond drilling, general mine maps and outside survey. Mr. Berglund and his engineer, Mr. Miller, go through the mine on a complete tour every day.

The total mining crew, including mine foremen, shift bosses, engineers, diamond drillers, and development crews, averages 112 men per day. This crew of 112 men averages better than seven tons per eight hour shift.

Card System Raised Efficiency

During the afternoon, cards are prepared for each miner and each mucking machine operator, giving them the location where to drill, what machine to use, and where the machine is located. They also give the mucking machine operators the information as to what stopes and faces must be mucked out during the night shift for the day shift miners. On the miner's cards the number of holes required and the type and number of sticks of powder to be used are also recorded. The mine shifter gets a report where every man under him will be working and the work that he will be doing. Mucking shifters get a report telling the amount of rock and from where it is to be taken. The trammers receive their cards informing them of the chutes from which the muck must be taken and in what proportions during the shift. When the day shift goes on, the cards prepared the day before are used, and the men find their drilling face completely cleaned out and the machine located there for them by the night shift.

We have found that this method

Fig. 6. Details of Sullivan double drum scraper hauler installation

Fig. 7. Mucking mechanically directly into cars with set-up similar to Fig. 5

has saved approximately one hour per day on the drilling time and increased the tonnage 25 percent per machine. Mucking machine operators more than doubled the amount of rock moved per shift.

The principal benefit was in the mill feed. This system has permitted maintenance of mill heads at all times within 2 percent; whereas before, mill heads would sometimes double within an eight hour shift. With these improved conditions of the mill feed, recoveries and grade of concentrates have increased considerably.

Each shifter makes out a mine report after his shift is completed, which is taken to the warehouse office in the morning. Rock ton costs per stope and over-all rock ton costs are then figured out. This gives us a daily cost on labor and powder which is very accurate, and allows us to pick up the weak spots.

Maps of the mine are kept up weekly with elevations of the back, floor, and side walls of all the stopes. All drifts and raises are surveyed daily when geology recordings are taken. Considerable study is spent on all faults as they occur. Diamond drill holes are inspected and the core logged daily. This information is compiled on the maps and every day a discussion is held by the engineers and management on the mine in general. We have found that this has saved considerable money in keeping work from going too far astray.

Following is a cost set-up which is an improvement of 33 cents per ton over the previous record month, which was brought about by the card system explained above. We believe that further reduction in costs may be effected in the future when the system is more competely worked out.

Mining Costs

Administration	$0.035
Mining	0.327
Blacksmith	0.032
Powder	0.14
Mucking	0.271
Hoisting	0.063
Railroad	0.031
Supplies	0.095
Repairs	0.054
Miscellaneous	0.020
	$1.068

THE MILL

Crushing

After the ore reaches the main crusher house bin it is fed to a 20 by 30 in. Universal jaw crusher by a 20 in. Ross chain gate feeder. Following crushing to minus 2½ in. the ore drops on a 22-in. conveyor belt which carries it to a 4 by 5 ft. Hummer screen. This screen takes all the minus ⅜-in. material and deposits it on the main conveyor belt to the mill ore bins. As the material dumps onto the screen all the iron, such as eye bolts, drill steel and wedges are picked up by a magnet.

From the screen the plus ⅜-in. material is carried by two conveyors on a 21 degree slope up to the feed box on a 4-ft. Simons Cone short head crusher. The product from this crusher, which is 60 percent minus ⅜-in. and all minus ½-in., is deposited on the main conveyor to the mill ore bins.

Fig. 8. Slushing into an ore pocket at Pend Oreille

Storage

From the crusher house to the main ore bins the first conveyor, 184 ft. long on a 21 degree slope, raises the material to the main track level. The other conveyor, set at 90 degrees to the main conveyor, carries the material over the roof of the mill on a plus 21 degree slope for 220 ft. to the first ore bin (Fig. 1). There the material is split so that approximately 42 percent goes into the first bin of 600 ton active load capacity, and the balance of 58 percent is conveyed an additional 78 ft. horizontally to the second ore bin of 500 ton active load capacity. These bins are set on a concrete foundation and are circular (Fig. 9 shows No. 1 ore bin before No. 2 bin was installed). The inside diameters of the bins are 26 and 22 ft., respectively, and both are 26 ft. high. The walls are made of 4 by 6 in. timbers cut with a slight bevel on each edge, held together by ½ by 1 ft. spline. Around the bins are placed 1¼-in. round steel rods which have three tightening screws.

Fig. 9. No. 1 ore bin before addition of the No. 2 bin

This type of bin costs approximately $4 per ton storage. They have proved very satisfactory except that during crushing hours the materials have a tendency to classify; that is, the coarser material up to ½ in. tends to run to the sides of the bin and the fine material, minus ⅛ in., to cling to the cone. After crushing hours the tonnage fed to the mill decreases slightly, due to the coarser materials caving in from the sides and entering the mill without the fine materials which came through during the crushing hours.

Ore is fed under the bins onto an 18 in. conveyor belt which delivers the materials directly to each mill. It

is interesting to note that the feed entering the mill is 8 percent minus 200 mesh, which contains 30 percent of the total metallics in the mill feed. This is due to the high grade lead and zinc ores being very free, thus becoming pulverized during shooting, transporting and primary crushing.

Grinding and Classifying

The No. 1 mill is a 7 by 6 ft. Allis-Chalmers which is in closed circuit with a 7 by 16 ft. Hardinge type classifier. This mill is driven by a 150 hp. slip ring Westinghouse motor. The No. 2 mill is an 8 ft. by 48 in. Hardinge operating in closed circuit with a 4 ft. Akins classsifier. This mill is run by a 150 hp. Electric Manufacturing 2,300 volt synchronous motor. Aerofloat is added into the head end of each ball mill at the rate of 0.23 lb. per ton of ore milled. The discharge from the classifiers, which runs approximately 4 percent lead and 6 percent zinc, has been ground to:

+ 48 mesh	.....	5.5 percent
+ 65 "	.....	9.8 percent
+100 "	.....	10.6 percent
+150 "	.....	11.2 percent
+200 "	.....	9.9 percent
—200 "	.....	53.0 percent

The Allis-Chalmers mill grinds 275 tons per day and the Hardinge mill handles 375 tons per day. They average over 18,000 tons per month, with average lost time of three days.

Flotation

The discharge from both classifiers is deposited into a splitting box, where the feed is divided evenly and sent to two circuits of 10 cells each where the lead is removed. Pine oil is fed at the splitting box and in different cells through the circuit as required. The lead flotation cells are 32-in. and of the air flow type made by the Union Iron Works of Spokane. The lead product from these cells is sent to a 2-in. Wilfrey pump which sends the product to a 6-ft four-leaf American type filter. The filter dries the material so that only 9 percent moisture is left in the finished lead concentrate which is then ready for shipment. The lead concentrate will assay plus 80 percent lead and will contain less than one percent zinc. Lead recovery averages 99 percent.

The tailings from the lead cells are then sent to a 10 by 10 ft. Denver conditioner tank where copper sulphate is added in dry form to the amount of 0.59 lb. per ton. The product from this tank is elevated by a 4-in. Hydroseal pump to a splitter where the feed is evenly divided to two 12-cell circuits of 32-in. Denver Equipment machines.

Fig. 10. Inside the 12 x 20-ft. diversion tunnel, 720 ft. long, supplying water to the new power plant

Xanthate is added at the rate of 0.088 lb. per ton and pine oil at the rate of 0.5 lb. per ton in the splitter and into the cells as required. The product from the first four cells on each unit is taken as the zinc concentrate which will assay about 55-60 percent zinc. This product is then put into three air type cleaner cells. The concentrate from the first cell goes to the second and the tailing from the first cell goes to the re-grind mill and is returned to the head of the zinc flotation circuit. The concentrate from the second cell goes to the third cell and the tailing from the second cell is returned to the first cell. The product from the third cell is pumped into a 24 by 8 ft. Denver thickener, and the tailing from the third cell is returned to the second cell. The product from the third cell will assay approximately 60-61 percent zinc, and when the lead feed to the ball mills is over one percent the zinc product will have about 0.5-2 percent lead in it. Cyanide is added at the rate of 2.5 lb. per ton of zinc concentrate. In the 24-ft. thickener the cyanide has an opportunity to contact the zinc and at the same time thicken it to a density of 28 percent, which is then fed to six 24-in. Weinig flotation cells where the zinc is depressed and the lead in the zinc cencentrate is floated off. The lead product from this cell will run approximately 40 percent lead and 10 percent zinc. The lead reject from these cells is pumped to the lead filter and is added to the 80 percent lead coming from the main lead machines. There is approximately one ton of this low grade lead added every 24 hours to the higher grade lead, thus reducing the grade of lead concentrate approximately 0.50 percent.

The tailing from the Weinig cells, which is the zinc concentrate, is pumped to a 20 by 10 ft. Denver thickener, where slack lime is added at the rate of one lb. per ton of concentrate. In the thickener the lime depresses the zinc slime and keeps it from overflowing to the water discharge. The product from this thickener is then sent to a 6-ft. six-leaf American disc filter. The filtered product is reduced to 9 percent moisture and will assay 62.5 percent zinc and less than 0.20 percent lead. This gives us a zinc product which commands a premium.

The cost of eliminating the lead from the zinc concentrate is approximately 55 cents per ton of zinc concentrate. If the lead in the zinc concentrate is reduced to less than 0.10 percent the premium increases, allowing a greater profit from this unit. Zinc recovery averages over 92 percent.

Mill Personnel and Costs

The mill is operated by two men per shift, a mill operator and a mill helper. On the day shift the mill foreman, Mr. Fager, and a repairman are on duty making a total of eight men per 24 hours for the mill. The mill operating cost, including chemicals, labor, repairs, power, iron, crushing, assaying, supplies, and supervision, is approximately 50 cents per ton of mill feed.

Samples taken daily throughout the mill are taken to the assay office where complete determinations are made of all samples. These are posted in the

Fig. 11. Hydro-electric plant of Pend Oreille Mines & Metals Co. at Metaline Falls, Wash.

mill as rapidly as possible. The chemist, Mr. Crampton, compiles daily costs and all necessary mill information for the mill foreman.

Mill Construction

Heat for the mill is furnished by a wood boiler, and is distributed by three air circulating radiators. The mill building is all set on concrete foundations, with steel beams and steel girders for the roof. The walls are constructed with 6 by 6 in. hollow Duntile cement brick, which are colored green and buff on the exterior. The roof is of 2 by 6 in. timber, covered by one layer of paper, with corrugated iron on top. The drop from the ball mill floor to the flotation floor is 8 ft., and from the flotation floor to the cleaner floor is 12 ft. The filters are set on the flotation floor, allowing the operator to check the filter without leaving the flotation floor.

Power Plant

During 1937 the Pend Oreille Mines & Metals Company installed a hydro-electric plant at Metaline Falls on the Pend Oreille River (Figs. 10 and 11). This hydro-electric plant was necessary to supply sufficient power for the Pend Oreille operation and for any other mine developments in the district. There will be detailed articles on the power project appearing in the near future in the *Engineering and Mining Journal* and in the *Electrical World*. These two articles will cover the construction and design of the plant.

Humor in Business

Fortunately for those who must wade through innumerable letters every day, sparkling wit is not entirely lacking even in business matters, as evidenced by the following letter:

"In reply to your request to send a check for your very good work, we wish to inform you that the present condition of our bank account makes it almost impossible. Our shattered financial condition is due to Federal laws, State laws, county laws, corporation laws, liquor laws, mother-in-laws, brother-in-laws, sister-in-laws and outlaws.

"Through these laws we are compelled to pay a business tax, amusement tax, head tax, school tax, gas tax, light tax, water tax, sales tax, liquor tax, carpet tax, income tax, food tax, furniture tax and excise tax. Even our brains are taxed. We are required to get a business license, car license, truck license, liquor license, not to mention a marriage license and a dog license.

"We are also required to contribute to every society and organization which the genius of man is capable to bringing to life; to women's relief, the unemployed relief, and the gold diggers relief. Also to every hospital and charitable institution in the city including the Red Cross, Black Cross, Purple Cross and Double Cross.

"For our own safety we are required to carry life insurance, property insurance, liability insurance, burglar insurance, accident insurance, business insurance, earthquake insurance, tornado insurance, unemployment insurance, old age insurance and fire insurance.

"Our business is so governed that it is no easy matter for us to find out who owns it. We are inspected, expected, suspected, disrespected, rejected, examined, reexamined, informed, reformed, required, summoned, commanded, and compelled until we provide an inexhaustible supply of money for every known need, desire or hope of the human race.

"Simply because we refuse to donate to something or other, we are boycotted, talked about, lied about, held up, held down, and robbed until we are almost ruined.

"We can tell you honestly that, except for the miracle that happened, we could not enclose this check. The wolf that comes to many doors nowadays just had pups in our office. We sold them to our stockholders and here is the money.

"Yours faithfully,

"HARASSED."

Fig. 1. Main launder and laterals distributing tailing to storage pool. Main launder too far back

Tailings Disposal Practice of Shenandoah-Dives Mining Company†

• *Lessons From 3 Years' Experience Now Permit Halving Original Costs*

By CHARLES A. CHASE
General Manager
and DAN M. KENTRO

IN PRESENTING the story of tailing storage by Shenandoah-Dives Mining Co., it is but fair to state at the outset that recommendations of the late J. T. Shimmin, a brilliant workman, were followed. Early consideration had been given to the use of the Moore filter, but Shimmin's prompt comment was that costs of this process were prohibitive. He had developed his method on Butte and Superior tailing at Butte, Mont., so climatic conditions were little different from ours.

The basic principle of the method developed by Shimmin is that a single spigot will draw off sand in such a ratio to water as will permit the sand to build in a firm pile; and of course a series of such piles will merge into a continuous firm wall of sand. Behind this wall slimy water may be accumulated for sedimentation, permitting decantation of super-natant clear water through a box laid on the ground surface through the sand wall.

In order to build the sand wall away laterally from the trestle supporting the launder or pipe, individual launders, one for each spigot, carry the tailing flow far enough to the down-hill side to permit a ditcher, drawn by horses or a tractor, to shape the sand wall in such manner as to retain the depositing tailing.

Such were the recommendations. The farmers of the lower Animas Valley looked with interest and approval at the early developments, and in general have been reasonable since. Beginning in July, 1935, a start was made toward storage before cold weather set in; from June, 1936, the bulk of tailing has been held at all times; and since August, 1937, retention has been complete. In the entire period the total tonnage milled from which we

CHAS. A. CHASE

† Presented to Annual Meeting, Colorado Mining Assn. and Colorado Chapter, American Mining Congress, Pueblo, Jan. 10, 1938.

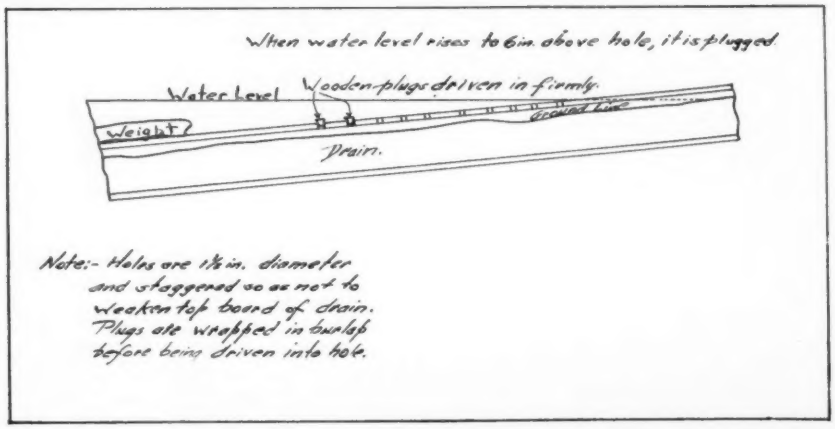


Fig. 2. Details of box used in decantation of clear water

attempted to hold tailing has been 268,000 tons, and a charge has been made to the work of $32,000, or 12 cents per ton.

Viewing the development today, after two and one-half years of education, it seems probable that one-half of the total cost was wasted. In other words, it seems that possession of our present knowledge at the start would have permitted the saving of some $16,000; and it seems now that these operations can be carried on in future at 6 cents per ton, with the possibility of lowering that figure appreciably.

The method is admirable and effective, but the amount of refined detail of application was not foreseen in any degree. Possibly Mr. Shimmin was so gifted (and he was gifted) that he did not stumble as we did; and perhaps in several years he had forgotten some pitfalls.

Three Principal Steps

The work divides naturally into three elements:

1. *Primary transportation to the site.* This is effected principally by means of a V-box of two 2-in. planks, 12 in. and 10 in. wide, carried on a trestle 20 ft. high and set on a 3 to 3.5 percent gradient. Mr. Shimmin preferred vertical-grain wood pipe, which may be better. He said that he used 1.5 percent gradient. In auxiliary service we have used 8-in. steel pipe on 2.5 percent gradient.

The gradient required varies naturally with the amount of coarse sand being carried. As coarse a product as 33 percent on 48-mesh has been carried; but present practice is to reduce this figure materially, with the expectation that 2.5 percent gradient will serve generally to carry the material.

So far as amount of water is concerned, it has been our practice to follow Shimmin's specification of 4 tons of water per ton of ore—a ratio permitting ready stratification of the sand in launder or pipe.

In connection with primary transportation, it has become necessary within the past year to elevate the tailings on leaving the mill. For this purpose a Hydro-Seal rubber-fitted pump was installed, and during its first seven months of operation it has performed flawlessly, without replacements.

2. *Secondary transporta-*

Fig. 3. Serious slide of sand bank caused by slippage on clay seam beneath

Fig. 4. Inner wall of the face builds up at high angle when settling in still water, and makes large area available for winter storage

tion—distribution at the storage pools. For this purpose the V-box is excellent, because of the ready accessibility of its low edge for setting pipe spigots, and for cleaning rubbish from the spigots (Fig. 1). The bane of a tailing poolman is the wood pulp resulting from grinding scrap mine timber in the ball mill. If permitted to leave the mill with the tailing, this pulp calls for 24-hour service in keeping spigots operable. After considerable delay, we installed a trommel screen 2½ ft. in diameter and 6 ft. long, of 9-mesh, 18-gauge steel wire cloth. Located with great care to avoid backwash of the pulp, and heavily washed, it is effective. Thus operated, the cleaning of spigots requires little labor.

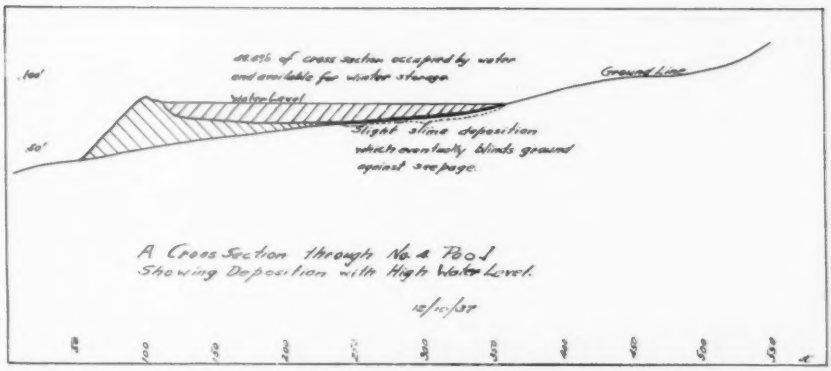


Fig. 5. Maximum front wall is built in mild weather with ample space behind filled with water to be displaced by tailing during severe winter

Lateral transportation from the distributing launder is by a groove ¾ in. deep and 1.5 in. wide plowed in one broad face of a 2-in. by 4-in. piece of Douglas fir 20 ft. long. This is our own device and is good. The pieces of fir are given necessary support.

3. *Decantation of clear-water.* A box of 2-in. plank having an 8¼-in. by 11½-in. opening is laid up the hillside, preferably in a shallow trench, prior to deposition. It has 12-in. bottom and top boards and 12-in sides. All joints are sealed with double thickness of burlap, nailing is on 6-in. centers; and light frames of ½-in. by 1½-in. iron strap, placed at 4-ft. intervals with the box, safeguard against collapse. The costly collapse of a large drain prompted this improvement. Planks 3 ft. long, burlapped beneath, and heavily nailed, reinforce joints between sections. These boxes must be heavily loaded with scrap steel or rock to prevent floating as the pools fill.

Fig. 6. Tailing being deposited in pool with water level low. Main launder too far back from top of dam

The actual decantation is through a series of holes of 1½-in. diameter bored in the top plank of the box where the surface of the water meets the box. As the water level rises, one low hole is plugged and another higher hole is opened. Two or three holes may be in service at one time (Fig. 2).

It is to be noted particularly that the box, carried up the hill ahead of deposition, stands with end open to receive water in volume in case of sudden downflow of rain on the hillside.

The method of decantation thus described is the planned method. In actual practice only a trifling part of the total flow of water is thus removed. The hillside on which the tailing is deposited is so remarkably porous that a large part of the water settles into it, and appears at lower points on the hillside as crystal-clear filtrate. A special characteristic of this sub-flow is its readiness to reappear as springs in the highway. Decanted water is for the most part above reproach as to clarity, but the ground-filtered water commands respect even from the Isaac Walton League. The Animas is reported a first-class fishing stream.

Soil Conditions Caused Trouble

The extreme porosity of the hillside has been mentioned, and its importance has gradually been disclosed by various factors. In the first place, the hillside surface was broken in building the highway, which is situated just below and parallel to the tailing accumulation. For some 200 ft. the open road cut disclosed impervious clay beneath the porous soil but above the level of highway. For a year, as the tailing load grew on the porous soil, and it absorbed water, the threat existed that the heavily loaded soil and the sand bank would slide out on the clay bed beneath. One serious slide occurred (Fig. 3). Stability seems now established.

In depositing front wall again after the break, laying it thus on the impervious clay bed, full realization came of the need of porosity. The sand, dropped on the impervious clay, held its moisture and lacked stability. To surmount this difficulty a wall of porous wood pulp 3 ft. high, held in place by a crib structure, was built across the break. The unstable sand behind the wall drained off its contained water and became as sound as the sand wall resting on the original porous soil, which is characteristically and remarkably stable.

It seems clear that, for the sand wall to have stability, free drainage of its contained moisture must exist in the soil, or be provided at the toe of the wall.

Soil porosity, absorbing all or nearly all of the water in our case, directly controls the water levels in the pools; and the water level in each case determines the shape of the walls of tail-

Fig. 8. Shenandoah-Dives mill, Silverton, Colo.

ing bounding the individual pools. With high water level, the deposited tailing settles promptly in still water; the face of the inner wall builds up at a high angle, and a great part of the total space behind the wall, occupied only by water, becomes available for winter storage (Fig. 4). Probably unimportant in climates having little frost, this point is critical in a severe climate. Except for those built of coarse sand, walls containing ice may not be expected to stand through the spring thaw. The purpose, therefore, is to build maximum front wall in the mild season, and accumulate behind it maximum space, filled with water, which may be displaced with tailing in the depths of winter (Fig. 5).

Infiltration of flocculent elements of the tailing gradually binds completely the pores of the soil, making the several pools essentially watertight. This process, advancing up the hill, forces to progressively greater depths in the soil the sub-surface flows of water entering the fresh soil at the shore line.

The work has been at a great disadvantage through these first three seasons because of the limitations imposed by the narrowness of the strip of ground available for deposition. The first 20 ft. high flume commanded but a narrow strip. Now, with front wall rising at 45° and the ground rising at 9°, volume behind future lifts will be multiplied, with corresponding sharp decreases in cost per ton for launder structure and raising of top of front wall.

The Shimmin specification, as noted, called for team or tractor and ditcher, for throwing up the top of the front wall. By reason of the limitations of space, and the needed rapid building, the work has never been organized on this basis; and all raising of bank top has been by hand.

Spigot Details

All spigots were originally of ½-in. pipe, equally spaced at about 2 ft. The coarse sand, dropping through the spigots first reached, builds a front wall rapidly descending in height. Experience has developed the practice of using ¾-in. spigots on 6-in. spacing where the launder reaches the mountain, after turning from the front wall to build the transverse walls bounding the individual pools. At some distance from this end the smaller spigots are useful and may be opened in such number as to preserve a measure of evenness in height of wall. The extremely fine slime flowing from the final spigots builds reasonably rapidly, if the water level is high, an extremely firm and tenacious wall.

Fig. 7. General view of pools 1 to 4 of tailing accumulation.

The geometry of placing the main launder is simple. As the front wall can be raised at a 45° angle from the horizontal, a trestle 20 ft. high calls for lateral launders 20 ft. long, which are gradually drawn back as the wall rises; and later are substituted with short ones. The results of inattention to this detail are shown in Figure 6, the launder being too far from the front wall.

Wood Pulp an Aid as Filter

Wood pulp has been mentioned as a filter. It has proved an invaluable aid. A year ago springs developed under the toe of the front wall. A mat of willows laid over the wet area was covered with wood pulp and the sand deposited again. No more sand moved.

We have described in detail tailing storage under rather difficult conditions, and have given costs. Before us now is the new Sunnyside work. They have the advantage of a valley floor a few hundred feet wide and a half mile long, divided into four generous pools. A considerable original investment went into dikes, bounding and dividing, thrown up by power shovel. The original investment was large, $4,500, but currently their operating cost is almost negligible.

Stability of the sand wall has been stressed, but not overstressed, for geology in the making is clearly demonstrated. We have been tardy in planting willows the length of the toe, but will do it. We are prompted to try grass on the face of the wall, this having been suggested by the appearance of a volunteer grass plot a few square feet in area a few feet up on the front wall; we may yet demonstrate to the farmers that they are deprived of good soil-making material.

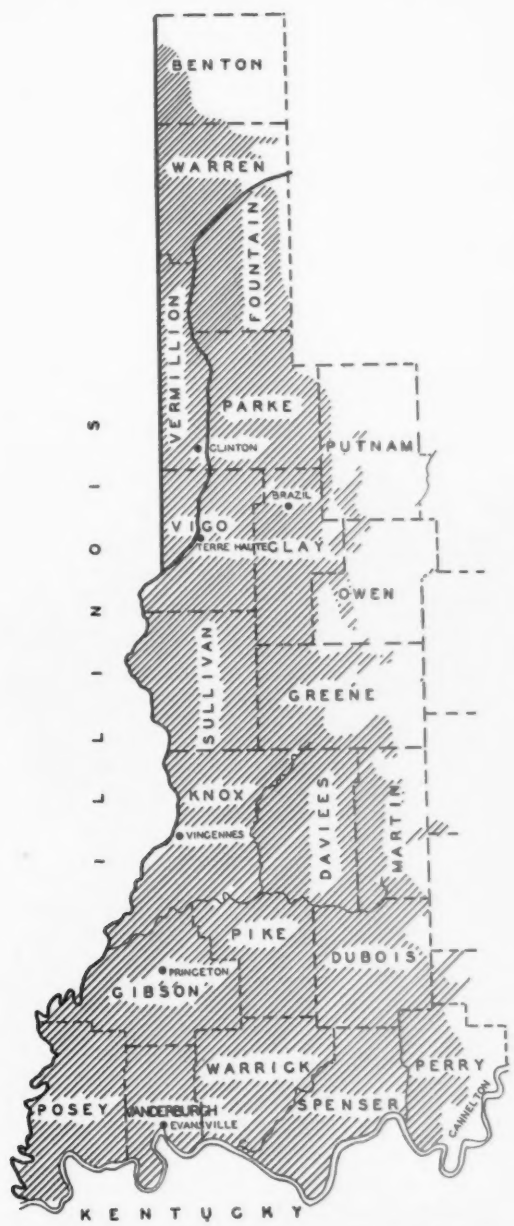
Figure 7 gives a general view of the work, and Figure 8 a view of the mill.

Representatives from every continent are to attend the International Mining Congress to be held in San Francisco during the 1939 Golden Gate International Exposition.

HOOSIER COAL MINING

• *Modernization the Controlling Factor of Successful Operation in Indiana*

By JAMES HYSLOP
Manager of Operations
Walter Bledsoe & Co.
Terre Haute, Ind.



Plant I. Area in southwestern Indiana underlain by coal

ABOUT 6,500 square miles of the State of Indiana is underlain by bituminous coal. This area along the southwestern boundary of the State shown by the outline map (plate I), forms the eastern edge of the eastern interior coal basin. The Indiana coal field is distributed through 28 counties, and there are 32 distinct seams in this territory. These coals occur in the Upper Carboniferous or Pennsylvanian system of rocks which extend over 85 counties in Illinois, 28 counties in Indiana and 21 counties in western Kentucky.

Of the 32 coals mentioned, nine are, or have been, commercially mined. These workable coals run from 3 feet to 10 feet in thickness. All of them outcrop near the surface at the edge of the coal basin. From the outcrop they gradually slope westward and are worked at a maximum depth of about 500 feet. The bulk of the coal is mined from shafts, or by stripping, although there are a few important mines which are worked from slopes, and in earlier years this method was quite popular. The average shaft depth throughout the State is about 250 feet.

Description of Seams

Some of the workable coals, notably the block coal seams, occur principally in local basins, varying from a few acres to several hundred acres in extent. The more important seams designated as No. VI, No. V, No. IV, and No. III are workable over large areas. In many places several seams are worked from one mine. Near Terre Haute all four of the above mentioned seams have been mined from one terri-

tory. The principal Indiana seams are identified by a system of Roman numerals established by George H. Ashley in 1898. Numbering begins with the lower seams and progresses to those nearer the surface, the numbers bearing no direct relationship to systems of identification of the seams in the adjacent States of Illinois and Kentucky. Considerable work has been done by the geological departments of the three States to correlate their coals. Table 1 shows the correlation of the important Indiana seams to coals in the adjoining States.

TABLE 1

Indiana coals	*Illinois coals*	*Western Ky. coals*
No. VII	Danville No. 7	No. 13 ?
No. VI	Herrin No. 6	No. 11
No. V	Harrisburg No. 5	No. 9
No. IV	?	No. 8
No. III	Colchester No. 2	Schultztown coal
Minshall coal	Rock Island No. 1	Mannington coal ?
Upper block	Pope Creek coal	Elm Lick coal
Lower block	Willis coal	Bell coal
Cannel coal	No. Iowa	Hawesville coal

The following brief comments will serve to set forth the salient features of the important Indiana seams.

No. VII

Seam No. VII lies near the surface and is minable in Vermillion, Vigo, Sullivan and Knox Counties. There is a small strip mine in this coal west of the Wabash River near Terre Haute. Within the last few years it has been mined in Sullivan County, but at present production of No. VII coal is negligible, and it is unlikely that it will ever be an important coal as it is minable only in small local basins.

No. VI

The No. VI seam is a more important coal, a considerable proportion of the strip mine tonnage coming from this source. It ranges from 4 to 7 feet in thickness in the territory where it is minable. It compares favorably in quality with other Indiana coals when properly prepared. About 8 percent of the State's tonnage has come from this seam during the past 20 years.

No. V

No. V coal is the most important seam in the State, about 70 percent of the State's tonnage coming from this source at the present time. Varying in thickness throughout its minable territory from 4 to 10 feet, it is mined extensively both by stripping and underground systems. It outcrops near the surface in several counties and attains a maximum depth of about 600 feet in the southern part of the field. Both the largest shaft producer in the State—the Kings Station mine near Princeton,—and the largest strip mine —operated by the Enos Coal Company —are producing from this seam. A typical analysis of well prepared No. V coal is as follows:

	Pct. as rec'd in lab.
Moisture	8.13
Ash	8.33
Volatile	39.41
Fixed carbon	44.13
	100.00
B. t. u.	12,154
Sulphur	2.5

The underground mining conditions of the No. V seam are generally favorable for mechanical loading, as the height will usually permit the use of high capacity machines. The roof is generally a good black or gray slate. In some localities quite severe grades are encountered, but it is usually a level seam. While the reserves of this coal suitable for stripping are quite limited, there is a large acreage available for underground mining.

Fig. 1. Loading machine at work in an Indiana mine

No. IV

The No. IV seam has been Indiana's premium coal for the past 30 years due to its high quality. It is characterized by low sulphur content and high ash fusion. A typical analysis is as follows:

	Pct. as rec'd in lab.
Moisture	13.06
Ash	6.37
Volatile	34.32
Fixed carbon	46.25
	100.00
B. t. u.	11,725
Sulphur	.95

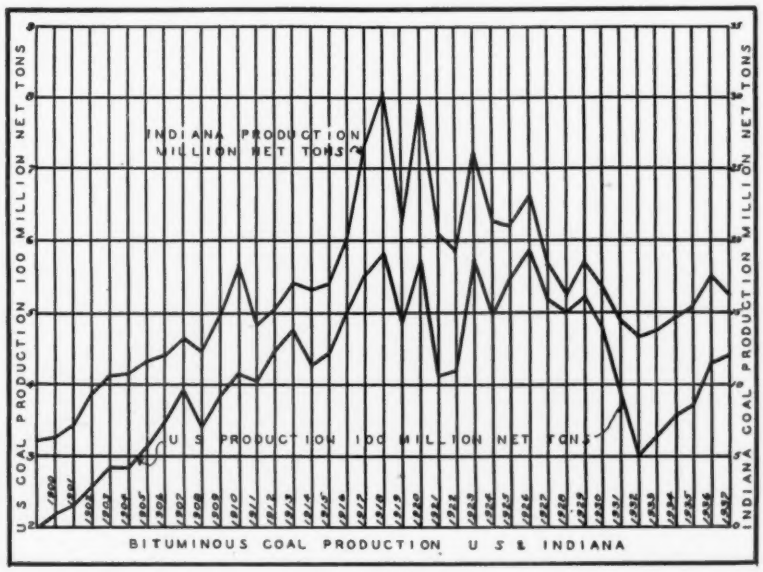
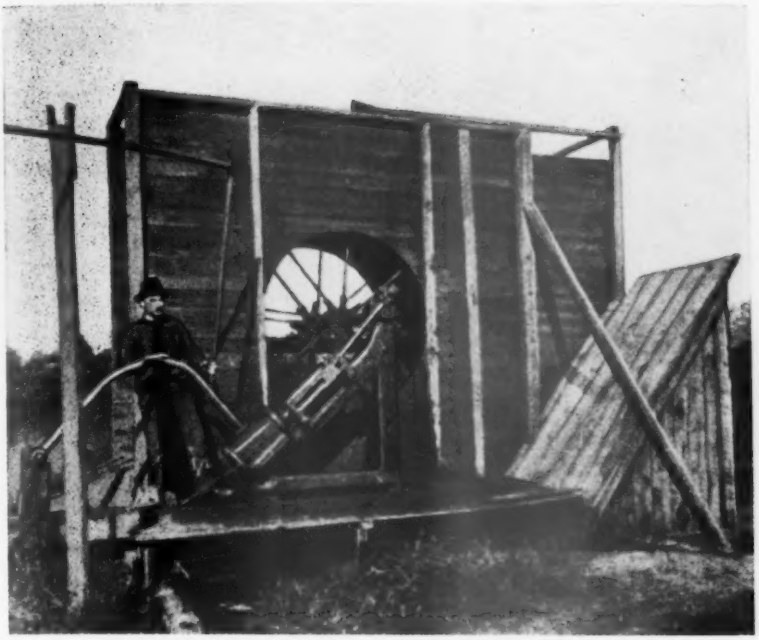


Plate II



Great progress in mine ventilation during past 30 years is shown by comparison of: Fig. 2, above, an old type fan with wood casing; and Fig. 3, below, a modern ventilating unit with an air cooler

Unfortunately, this seam is minable only over a very limited area, and in past years concentrated mining in this territory has exhausted most of the highly desirable acreage. In 1921 6,800,000 tons of No. IV coal were produced, about 34 percent of the output of Indiana for that year. In 1936 production had decreased to 3,000,000 tons, or about 17 percent of the total output. In Vigo and Vermillion Counties, where the richest deposit of this coal was found, it lies about 250 feet below the surface, and has an average thickness of about 4½ feet. It has an excellent roof, and other mining conditions are usually good.

No. III

The No. III seam is the most persistent vein throughout Indiana and the entire eastern interior coal basin. However, due to its somewhat adverse mining conditions and high percentage of impurities, it has not been extensively mined. In the past 20 years only about 3½ percent of the State's production has come from this source. No. III lies about 60 feet below the No. IV seam. It is usually about 6 feet thick. The roof is gray shale of a rather poor quality. Frequently the seam contains thick partings of slate or pyrite, and only the advent of efficient coal cleaning equipment makes it feasible to mine at the present time. The Snow Hill Coal Corporation has the only shaft operation in the State producing from this seam.

Minshall Coal

The Minshall seam is a relatively unimportant coal as it occurs in minable quantities only in Parke, Vermillion and Fountain Counties in the form of small irregular deposits. In the early days of mining in the State it was worked to some extent, but it is yielding coal in only small local operations at present.

Upper and Lower Block

The upper and low block seams were at one time Indiana's most important source of coal. This coal was discovered in 1851, and its low sulphur content and other favorable characteristics made it highly desirable for metallurgical and domestic purposes. The coal derives its name from the large cubical blocks in which it is naturally found. The blocks are formed by face and butt slips which run 2 to 3 feet apart. The demand for this coal increased very rapidly after its discovery; and Clay County, where it was

Fig. 4. An early Indiana 3-track tipple

principally mined, led the State in coal production up to the year 1901. Unfortunately, block coal is minable only over a very limited area and most of this has been worked out. However, there are still a number of small mines, both strip and shaft, producing this coal. In 1936 about 4½ percent of the State's production was block coal. The following is a typical analysis:

	Pct. as rec'd in lab.
Moisture	10.08
Ash	7.62
Volatile matter	33.80
Fixed carbon	48.50
	100.00
B. t. u.	12,000
Sulphur	.63

Cannel Coal

Canned coal was the first coal mined in the State. It is lusterless, very compact and even textured, and burns like a candle, whence the name. It does not compare favorably with other Indiana coals for use commercially, and is not being mined at the present time.

Discovery and Early Production

Coal was discovered in Indiana in 1763 by Colonel Croghan, who noticed coal on the Wabash River. It seems that the first coal mined in the State was dug by Robert Fulton in 1812. Fulton was taking his ship, the Orleans, on her first trip down the Ohio and stopped in Perry County near what is now the Town of Fulton, dug some coal and took it aboard his boat. This was probably the first coal mined in the eastern interior basin. Significantly the first commercial enterprise in the coal industry in Indiana began in this same district when the American Cannel Coal Company was incorporated in 1837. Production of coal was begun near Cannelton, Perry County.

Fig. 5. Largest and newest shaft washery in Indiana

Fig. 6. Disposal of refuse by aerial tram has solved many difficult problems. This unit handles 90 tons per hour

Fig. 7. Largest stripping shovel in Indiana, with a 30-yd. dipper

Early production records indicate that the growth of the Indiana industry was quite slow. Production in 1840 amounted to only 9,682 tons. Up to 1850 all the coal mined was either dug from near the surface or

Fig. 8. Minnehaha cleaning plant of Hickory Grove Mining Co.—an elaborate plant handling coal from a strip operation

mined from slopes near the outcrop. In 1850 the first shaft was sunk by John Hutchinson near Newburgh in Warrick County. Great impetus to the industry was given by the discovery of block coal in the year 1851. Special qualities in this coal permitted its use in blast furnaces; and the history of block coal mining indicates that quality and chemical analysis are most important factors in determining the development of coal areas.

Indiana Output 4 Percent of U. S. Total

The State of Indiana has produced about 4 percent of all of the bituminous coal mined in the United States from the earliest record up to the beginning of 1938, or about 719,000,000 tons. The State ranks sixth in this respect. It is interesting to note that in 1936 Indiana produced 4 percent of the total bituminous production and ranked sixth for that year. Plate II shows the production record of the State from the year 1899 to the end of 1936. Comparison of the State's production to the national production is also shown by the graph.

Market Territory Limited

The principal factor in governing the amount of coal mined in Indiana is the fact that the coals of the State compare unfavorably in quality with Eastern coal. This limits the market to an area to which the State bears a favorable geographical relation. The market is further restricted by the proximity of the Illinois coal field, which means that practically all of the coal mined must be consumed within Indiana or within a limited area north and west, including the Chicago district. From this it will be clear that the selling price of Indiana coal must be maintained at a relatively low level, and production must come from low cost mines. Statistics show that the selling price of Indiana coal is consistently lower than coal from any other district. The fact that practically all Indiana coal has been mined with union labor under a comparatively high wage scale has tended further to curtail production. This factor was especially prominent prior to the unionization of other fields in the last few years. Indiana coal operators have found it necessary to restrict their mining to seams presenting favorable conditions for low cost production and better quality coal.

Spur to Mechanized Mining

The conditions outlined above have encouraged the development of mechanized mining with resultant decreased production costs. Indiana leads the country in tons produced per man shift. With the development of mechanical loading and strip mining, the necessity for efficient coal cleaning plants has become imperative, so that at the present time practically every important mine in the State is equipped with some type of coal cleaning apparatus. Mechanization, mechanical cleaning and strip mining have been further encouraged by the fact that mining conditions and character of coal are such as to favor these modernized methods. Indiana mines therefore hold a great deal of interest for engineers and mine executives, and a brief review here of a few of the outstanding developments in recent years is undoubtedly in order.

Mechanical Loading

Mechanical loading, which was slow in getting started, has made rapid progress within the State in recent years. This trend began in about 1925. As is stated above, the thickness of the important seams, together with other natural conditions, favored the adoption of large high capacity machines, and all types of mobile loaders were tried out with varying degrees of success. Probably the first highly successful installation of this kind was at the Kings Station mine of the Princeton Mining Company, near Princeton. Joy machines and Goodman power shovels were installed at this mine when it was opened in 1923. Scraper loading was experimented with in Pike County about this time, but proved to be unsuccessful. Perhaps the principal hindrance to the widespread adoption of mechanical loading in the 1920's was the lack of mechanical cleaning facilities, since so many of the mines were producing from seams where a great deal of the coal cleaning was done by the loaders at the face. The advent of the modern cleaning plant has removed this difficulty, and now over 95 percent of the State's output is mechanically loaded. Figure 1 shows a loading machine at work in a typical Indiana mine.

Haulage

The advent of the loading machine has necessitated the modernization of

Fig. 9. Huge truck-trailer units hauling up to 30 tons have been an important factor in modernizing strip operations

other phases of underground mining. One very prominent tendency is the displacement of small mine cars by cars of high capacity. The largest car in use in the State has a capacity of 5.8 tons. In step with this has come the elimination of animal haulage. Practically all gathering is done by cable reel locomotives, although a few battery units are in service. Improved mine track has been another prominent feature. Track in rooms has been increased in size from 12 and 16 pound up to 30 and 40 pound rail. Steel ties are widely used. 60 and 70 pound rail is commonly used on main line track with properly ballasted wood ties.

Face Preparation

Most of the undercutting is still done with shortwall machines, although all of the newer mines are using track mounted cutters, and the use of the shortwall will undoubtedly decline greatly in the future.

Drilling is almost universally accomplished by the use of post mounted electric drills. Permissible powder is the principal explosive used for blasting, although two large mines in the State make use of Airdox machines for this purpose.

Power Distribution

The heavy power demands of underground mechanization has called for adequate substations and distribution systems. 2300 volt, 3 phase primary distribution usually carried on underground 3 conductor cable is the common practice. Substations are converters or motor generator sets which must be kept close to the load. In the early history of mine electric systems, power was generated at the mine. With the development of the high capacity central station, this practice was discarded and the use of purchased power became almost universal. In the last few years the problem of finding some use for washery sludge and dust has again encouraged the generation of power at the mines, and there are two modern generating stations in operation at mines in the State.

Ventilation and Hoisting

Ventilation has come in for its share of attention in modernization and is noticeably reflected in the evolution of the mine fan. Figure 2 shows a typical fan of 30 years ago. Figure 3 shows its modern counterpart. The centrifugal fan is losing favor and propeller fans are found to be more efficient from every standpoint. Figure 3 shows a Jeffrey Aeordyne installation coupled to an air cooler. Four of the largest mines in the State are finding it profitable to cool the mine air in the summer time in order to avoid bad roof conditions due to high temperatures. Cold water is used for this purpose.

Hoisting is done by steam and electric hoists. Both skip and cage systems are used. It is likely that the skip system will gain in favor in the future. Recently the Kings Station mine has installed an automatic man and material hoist, which does not make use of a hoisting engineer. Push button control on the elevator is used instead. This shaft is about 400 feet in depth.

Preparation

The advent of the cleaning plant has revolutionized mine top works. Figures 4 and 5 show the contrast between the old and the new. Figure 5 is the largest and newest shaft washery in the State. This plant makes use of both hydro-cleaning and air cleaning. The minus ⅜ inch coal is cleaned by air. The coarser sizes are washed in Vissac jigs. This plant operates in the No. III seam, which is noted for the large amount of impurities it contains. 20 to 25 percent of the raw input is impurities. Handling of this material has been solved by the aerial tramway refuse disposal system shown in Figure 6. This disposal system has a capacity of 90 tons per hour. Throughout the State the problem of refuse disposal is a prominent one, and is solved by use of trucks and larry cars, in addition to tramways.

Strip Mining

The phenomenal growth of strip mining in the State since 1917 is shown by Plate III. The necessity for low production costs encouraged the development of stripping plants around the outcrop of the coal field. The

largest producing mines in the State are strip mines, the largest one having a daily capacity of over 5,000 tons. Figure 7 shows the largest stripping shovel in the State. This machine has a 30-yard dipper and is capable of stripping up to 60 feet of overburden. The stripping plants have also found it necessary to invest in elaborate coal cleaning plants. Figure 8 shows the latest development of this kind in the State. This is the Minnehaha plant of the Hickory Grove Mining Company near Linton. It was completed in 1937, and as the illustration shows, the architectural features of the plant have been as carefully worked out as the mechanical design. The plant was built by the Jeffrey Manufacturing Company.

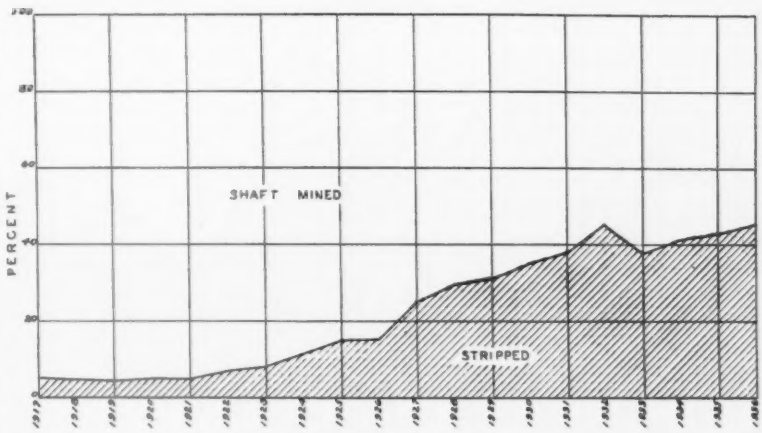


Plate III. Percent coal mined by strip and shaft operations in Indiana, 1917-1936

The transportation system is an important feature of strip mine modernization. In the last few years the trackage system has been very largely supplanted by rubber tired tractors. Huge automotive trailers, such as shown in Figure 9, haul up to 30 tons per unit.

Indiana at one time boasted of the largest coal mine in the world. On April 8, 1919, the No. 1 Mine of the American Coal Mining Company at Bicknell produced 7,280 tons in 8 hours. With the necessity for increased investment in cleaning plants, the trend has been to limit the hourly and daily capacity of individual mines, and few mines in the State have an hourly capacity of more than 500 tons. The shorter working day and increased capitalization of the present day mine encourage the multiple shift operation. A few mines in the State are operated in this way, and it is likely that this practice will increase.

Pit Mouth Generating Plant

The State boasts of one pit mouth generating station. The Dresser Power Plant and mine are shown in Figure 10. The No. V seam is only 4 feet thick at this location, and would not be mined at present were it necessary to add a freight rate to the high production cost from a seam of this kind. The plant located on the "Banks of the Wabash" consumes about 35,000 tons of coal per month and serves a wide area in central Indiana.

The Indiana coal industry must lead in mechanization if it is to survive. It would probably be in a more healthy state today had modernization begun sooner.

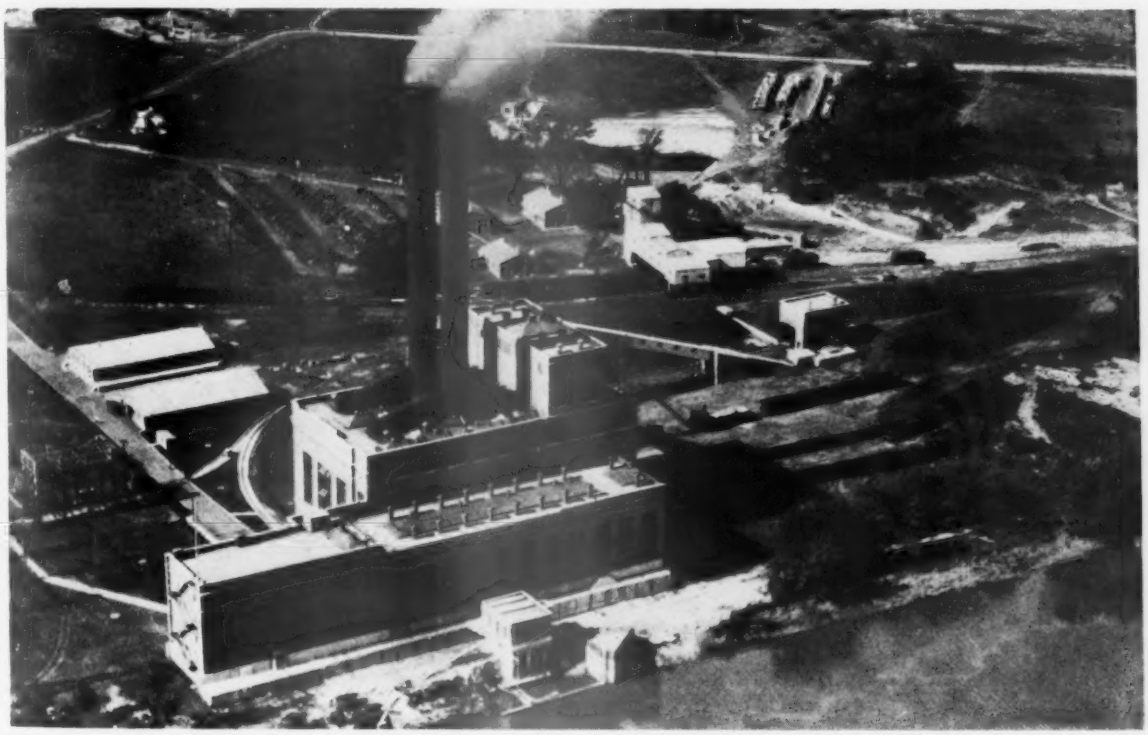


Fig. 10. The only pit mouth generating station in Indiana—the Dresser power plant and mine

Fig. 1. Track loader cleaning up along right side of 24-ft. room. Note power cable anchorage

Track Mounted CUTTERS and LOADERS at Old Ben No. 11

- ***Five Undercutters and Six Loaders Handle 3,300 Tons per Seven-Hour Shift***

By R. L. ADAMS
General Superintendent
Old Ben Coal Corporation
Franklin, Illinois

R. L. ADAMS

WHEN the demand for increased production made it advisable to reopen the No. 11 mine of the Old Ben Coal Corporation, located in Franklin County, in southern Illinois, experience gained through the partial mechanization of other operating Old Ben mines in the same field dictated complete mechanization for this mine. It had stood idle for five years, having been previously operated on a hand-loading basis with old-style chain breast undercutting machines. Our experience with track-mounted cutters and various types of loading equipment led to the selection of the track type of both cutting and loading machines for this operation (Figs. 1, 3 and 5). The height of the seam and other physical conditions permitted the use of standard machines with no alterations required to fit the local conditions. At the present time we are using five track-mounted Goodman undercutters and six track-mounted Goodman loading machines for an average daily production, in a seven-hour shift, of 3,300 tons.

Substations Added

In the previous operation of this mine the power distribution was dependent largely upon the trolley wire of the haulage system, but with the introduction of complete mechanization underground it became necessary to locate substations at the extremities of the mine workings, so as to cut down the power losses incident to transmission of direct current at 275 volts over long distances. Two such substations, aggregating 900 kw., are now in service, in addition to one 200-kw. M. G. set in the power plant at the mine. All substations are located above ground, and the D. C. power is transmitted from them

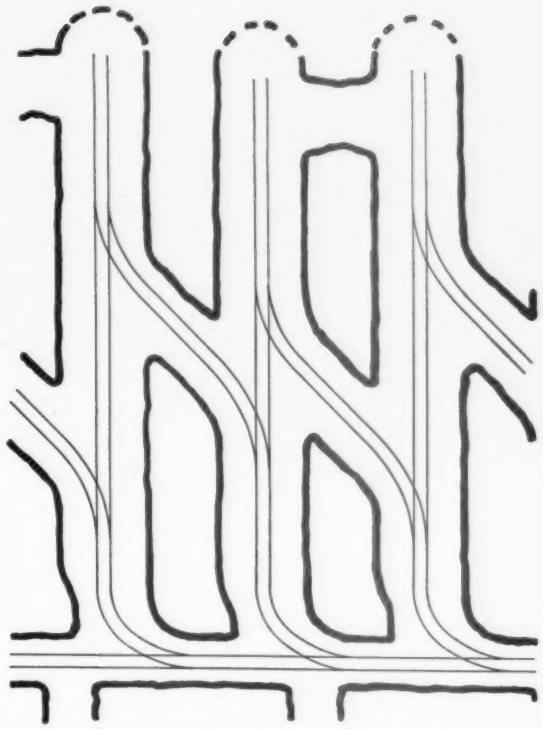


Fig. 2. Track arrangement in rooms to facilitate car service to loading machines

through drill holes to the workings. Our experience with substations located underground has not been altogether satisfactory, and for a number of years past we have maintained the practice described above, wherein all transformers and motor generator sets are kept on the surface.

Bottle Neck Is Hoisting

At the No. 11 mine, as at many other operations in this field, the hoisting equipment constitutes the bottle neck of the whole operation. Car capacity and hoist capacity determines the maximum production at this mine of 3,500 tons in a seven-hour shift. The single-shift capacity of our present complement of loaders and cutters is augmented by operating one, two, or three machines, both cutters and loaders, on a second shift, which is permissible under the present miners' and operators' contract. Loading machines on the second shift are operated by a skeleton crew, and they serve not only to insure a supply of coal for the first hour of the hoisting shift but also to take care of isolated places where long-distance tramming is necessary and which would otherwise impair the efficiency of the machines when operating with a full crew during the hoisting shift.

One of the problems in any mechanical loading mine is face preparation. The larger prepared sizes still continue to yield the higher sales realization, and degradation of the coal through the preparation plant and even in transit from mine to consumer must be prevented in so far as is humanly possible; nevertheless, the coal face must be so prepared that the loading machine may readily handle the broken-down coal without too much lost time in digging. We have found Cardox to be very satisfactory for breaking down the coal after it has been undercut, and it is being used exclusively in all our operations. Numerous tests have shown that even with mechanical loading with large-capacity machines, the coal at our mine when shot with Cardox gives a greater percentage of the larger sizes than hand-loaded coal from any other system of face preparation that we have used.

Track Layout

Probably the greatest single factor in the performance of any loading machine is the car service. The more rapidly that the car change under the loading machine can be made, the greater the production of the machine. A great deal of study and experimentation was made with various kinds of track layouts, the result of which has been a standard system now employed whereby the room track is connected through crosscuts by crossovers called locally back-switches (Fig. 2). Two gathering locomotives of the trolley and cable reel type serve each loader. The switching point for the car change is seldom more than 100 ft. from the loading machine, and it is not unusual to shift 200 cars in seven hours behind a loading machine. Time studies have been made to determine the efficiency of the various track systems and methods of switching cars

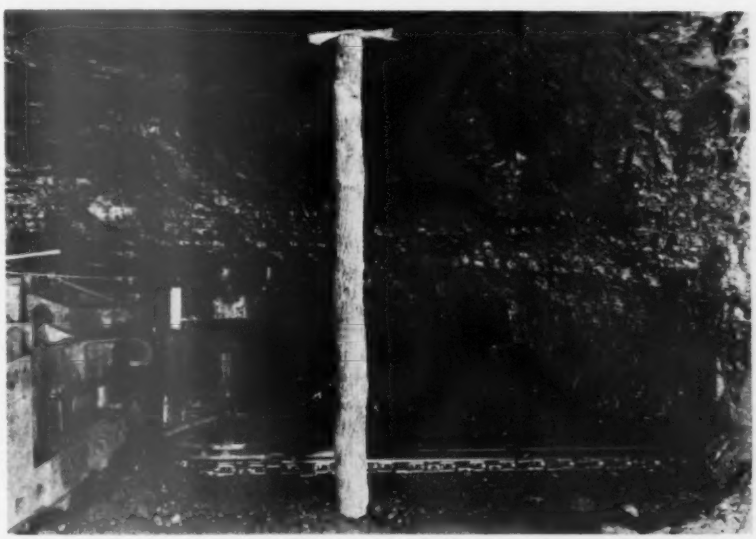


Fig. 3. Track cutter, with 9-ft. cutter bar, sumping in. Room is 24 ft. wide

from which the present system has been evolved. A daily report is kept on each unit which shows in part the performance of the loading machine, and this is incorporated in the mine manager's daily report covering all loaders. This report shows the delays from various causes, as well as the number of cars loaded.

Cutting Procedure

The cutting machines are equipped with a 9-ft. cutter bar, and since we have found that, under our conditions, shearing is not necessary nor desired when using Cardox, the machines are built for undercutting only. Bits are tipped with a composite rod containing tungsten carbide. Sharpening, tipping, and regrinding of bits is done in the shop of another mine and delivered by truck daily. The combination of track cutter and track loader is ideal, since the track laid in all working places serves both units equally well, and no changes are required in the track for the operation of either machine. Both require the track to be laid the same distance from the face for proper operation. The undercut is made in the coal just above the bottom (Fig. 3), and to prevent contamination by fire clay, the bottoms are not taken up except where necessary for laying track. The high cutting capacity of these cutters, together with their mobility, decreases the labor cost for all undercutting almost 50 percent below that of shortwall cutters.

Fig. 5. Track loader operating on curve into crosscut being driven between rooms

Both cutters and loaders have been in service long enough to establish their capacity for work and adaptability under the varying conditions found in this mine. Under ideal operating conditions the track cutters will undercut 750 to 800 tons of coal, and the loaders will load 600 tons or more; however, they are required to operate under all conditions encountered, some of which are steep grades, entries in development work, widely separated places requiring long-distance tramming, and bad roof conditions. The mine manager's report (Fig. 4) shows a typical operating day. Daily analysis of these reports readily shows any abnormal conditions and gives the management an opportunity to correct them promptly.

Lubrication of both cutters and loaders is done with great care as to thoroughness, frequency, and proper oils and greases. General maintenance is in charge of a single supervisor, who not only coordinates the work of lubrication, maintenance, and repairs but checks all requisitions for supplies and repair parts.

MINE MANAGER'S DAILY REPORT

MINE NO. 11 DATE Jan 18 1931

7:30 A. M. Barometer 29.50 (rising) falling. Weather Clear

Places where examiners report gas two consecutive mornings past.

none

								night		
Loading Machine	GL-1	GL-2	GL-3	GL-4	GL-5	GL-6	GL-22	GL-44		TOTALS
Cars Loaded	153	124	151	152	121	95	42	59		897
MINUTES DELAY: Waiting on Empties	10	25		15	20	30				100
Loader off Track		5	15		10	6				35
Cars off Track		5		5	30	10				50
Breakdown						5				5
Other Delays		15								15

REMARKS: GL-2 lost 15 min. track bons up on main entry.

Location deficient ventilation none

Location needing rock dust Main East main Gjrl

Location Cardox shells unrecovered for 5 days 26-17 J Entry

Unusual or hazardous conditions none

G. G. Anderson Mine Manager.

Fig. 4. Typical daily report of mine manager, giving pertinent data on the day's operation. On this date the production was 3,441 tons, with a car average of 3.836 tons. Note that two loaders were operated on the second shift, the regular number of the machine being doubled to indicate double shift and to identify cars loaded on second shaft

Butte Copper and Zinc Co. Suspends Operations

Butte Copper & Zinc Co., leased by Anaconda Copper Mining Co., ceased operations late in January, according to an announcement. A total of 230 men were laid off, the company having retained 70 men for development work. Mineral conditions at the mines were reported as excellent, but metal markets are not considered satisfactory enough at present to continue operations.

Lower end of 1,000-1,200-ton retorts in Tacoma plant

Processing Coal By Thermal-Chemical Distillation

- ***Low Temperature Process Successful in Converting Low Grade Coals Into Useful Products***

By JAMES E. LOUTTIT
Consulting Engineer
Coalene Company
Tacoma, Wash.

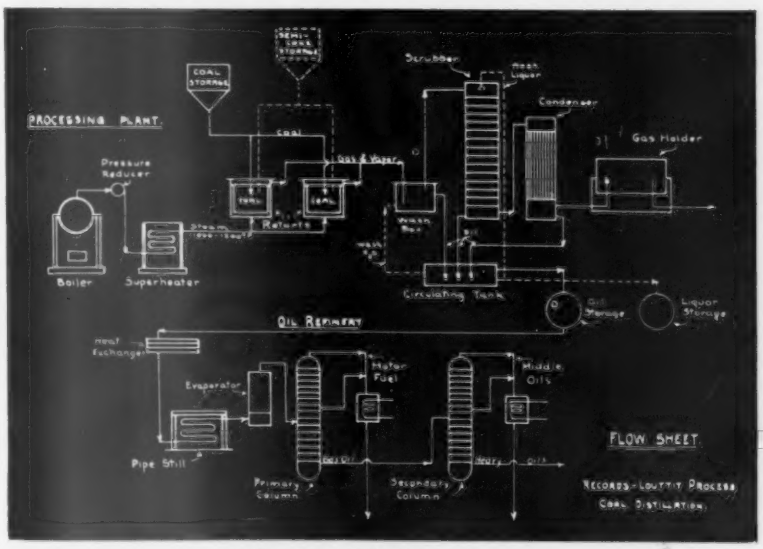
COAL as a source of the world's power is still top rank, even in the face of the newer water-power developments. The technic of its use as a power source has advanced along lines of increased burning efficiency as a raw material. Processing has been resorted to in cases where the products derived therefrom fill some specific use in industry in such form as coke, tar and chemical by-products. The problem of anticipating more complete coal utilization has become the special lot of the chemist and the chemical engineer. Two schools of thought have been working on the problem in the past decade, the oldest of which has been what is termed high-temperature carbonization as exemplified by modern by-products ovens. More recently much attention has been given to methods which have been termed low-temperature distillation. In point of fact, temperature is only one factor in the cycles necessary to economic coal processing. Pressure, synthetic atmospheres in which processing is carried on, catalytic reactions, mechanical devices and time all must be considered in any classification of modern coal processing.

The Records-Louttit process of thermal-chemical distillation of coal has attempted to take all of the above factors into consideration in the design and operation of the process. Results obtained in unit plant operation at Tacoma have proven the feasibility and economy of the idea.

Flexibility in adaption of the process to various types of coals has been one of the major accomplishments of the process. Coking coals are generally treated by the intermittent method. Non-coking coals and lignite are adaptable to both intermittent and continuous operation.

Treatment Relatively Simple

The process as practiced in the Tacoma plant involves a very simple cycle. The coal is treated in retorts,



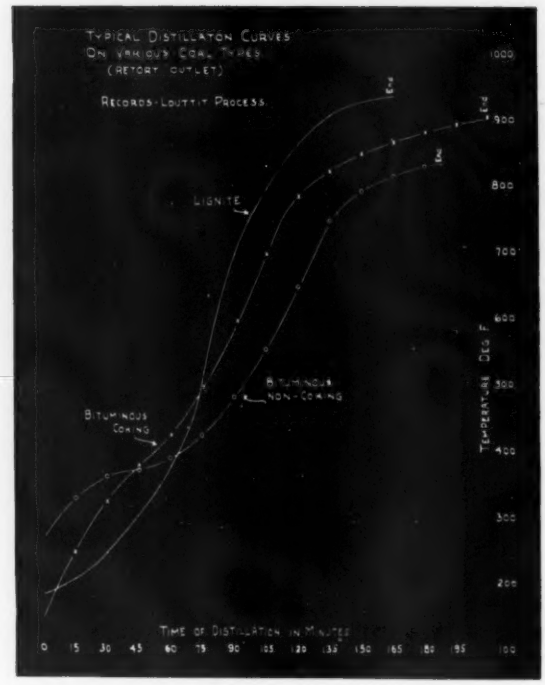
Flow sheet of distillation process

each having a capacity of 1,000 to 1,200 lb. of raw coal. Retorts of a ton capacity have been designed. The principle involved is that of subjecting the coal to distillation in a gaseous medium of superheated steam at comparatively high temperatures and low pressure. The temperature ranges from 1,000° F. to 1,300° F., depending on the type and character of the coal being treated. Pressure of the steam into the retort varies from 1 to 4 lb. Time of distillation—depending again upon the coal type—is from two and one-half to three and one-half hours.

A general expectancy yield in solid, liquid, and gaseous products from the treatment is as follows:

Char (semi-coke)	pounds	1,300
Primary tar-oil	gallons	32
Gas (600 B.t.u.)	cubic feet	5,000
Gas oil	gallons	3

In addition to the above, the process produces an aqueous condensate (50 gal. per ton of coal treated) which has been tested as an effective germicide and insecticide having a neutral reaction. Being neutral, there is no foliage burn when applied even to greenhouse plants.



Distillation Curves

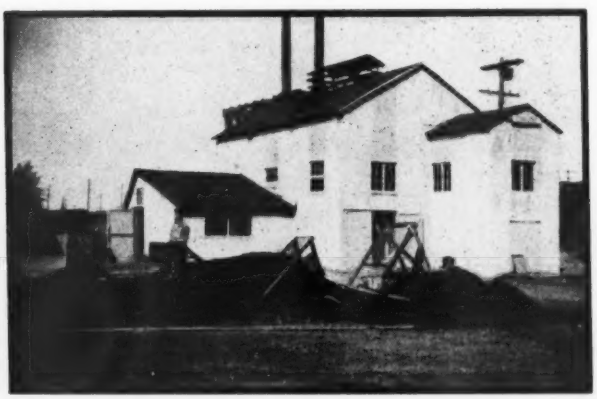
	Washington semi-bituminous		Eastern coking bituminous	
	Coal as received	Semi-coke	Coal as recd. dry	Semi-coke
	Pct.	Pct.	Pct.	Pct.
Moisture	19.8	1.8	.....	.....
Volatiles	31.5	9.8	42.00	10.73
Fixed carbon	36.1	74.7	49.29	78.63
Ash	12.6	13.7	8.71	10.64
	100.0	100.0	100.00	100.00
Sulphur			3.99	1.34
B. t. u.			13,474	13,095

Semi-Coke a Good Fuel

The semi-coke is a smokeless fuel, the physical character of which depends upon the type of raw coal treated. As the process lends itself readily to admixture of varying types of coal, the range of finished solid fuel is naturally large as to physical character. Coking coals to the amount of 40 percent mixed with non-coking coals produce a solid, firm, semi-coke suitable for domestic ranges and furnaces. Non-coking coals produce excellent stoker fuel, this applying particularly to semi-bituminous and lignite coals. A market for this type of fuel has been found for use in electric metallurgical furnaces and the chemical arts.

Sulphur, especially in eastern coking coal, has been a problem to operators. Results obtained by this process tend definitely toward reduction of total sulphur.

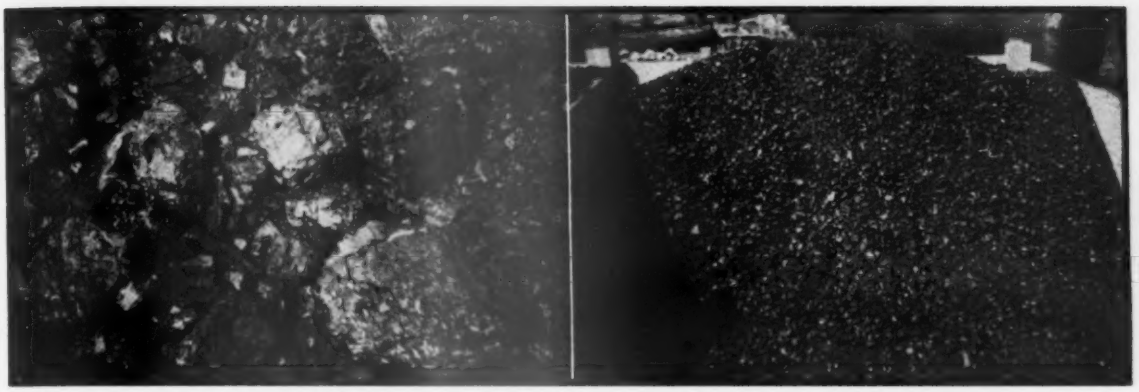
Tacoma plant



Good Stoker Fuel From Sub-Bituminous

During the past year extensive plant operation on southwestern Washington sub-bituminous coals has succeeded in producing from this coal a particularly high-grade stoker fuel. This has been accompanied with by-product recoveries of tar-oils and gases which make the operation a highly practical one. The above table gives results on two types of coal treated.

The semi-bituminous Washington



Freshly mined Washington sub-bituminous coal before processing

Stoker fuel made from material at left, after six months of open storage in test bin

coal above slacks very quickly upon exposure. After processing the semi-coke stoker fuel was subjected to six months exposure to the elements, with no deterioration noted. Long-term tests in stokers of both over and underfeed types have determined that this fuel was an ideal stoker fuel, although reduced rate of feed over raw coal is required for the greatest efficiency.

For a domestic stove and furnace fuel the combination of 40 percent coking coal and 60 percent non-coking coal makes an ideal raw product for processing into smokeless fuel. The semi-coke thus produced is smokeless, long-burning, and has the added advantage of easy ignition.

Importance of By-Products

In considering processed fuel, the by-products have heretofore been considered by mine owners as of secondary importance. This should not be the case in modern processing. These so-called by-products are important economically as a source of revenue. The hydrocarbon liquids condensed from the vapors of distillation by this process are true primary tar-oils, all of which are classed as paraffin base, and are low in free carbon.

A cheap and easy method of extracting the water of combination in the tar-oils has been worked out. Contrary to general belief, the primary oil is not mulsified to any great degree. In treating the oils won by the process it has been found advisable to proceed along lines as laid down by the petroleum industry rather than the general form of procedure practiced by gas works in the treating of heavy coal tars. The oils produced under this method cannot be compared, either physically or chemically, with natural coal tar as usually produced. Straight distillation with two major cuts, 0–600° F. for the first part, and 600–700° F. for the heavy wax fractions, has been found to suit best. Seventy-seven percent of the crude treated will come over in the first cut, 15 percent in the second, with the balance as ashless coke.

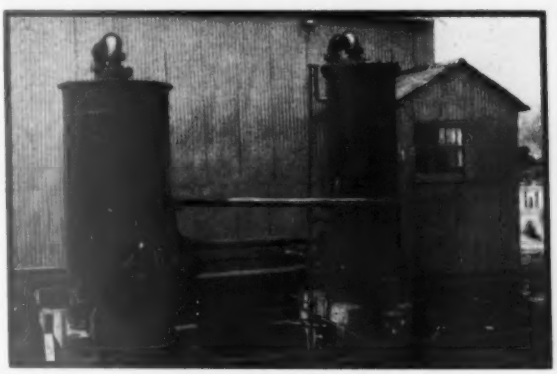
Fractional distillation of the first cut produces volatile compounds similar chemically to gasoline and suitable as a high-octane motor fuel. Lubricating oils and waxes come over as the higher boiling fractions in distilling this first cut. Phenols, cresols with a minimum of pitch, are procured from the second cut.

Research work carried out during the past year on these tar-oils have determined that they contain substantial values in resins, such as cumerine, for which there is a market demand.

The gas produced is very low in non-combustible gas, the major portion of the gas (88.7 percent) consisting of the combustible gases hydrogen and methane.

Steam the Principal Cost

In the operation of the process steam is the major cost. As steam can be generated at moderate cost in most all localities, the process is adaptable wherever coal is mined. Bleeder steam from turbines makes an acceptable source of supply at low cost. Where cheap electric power—off-peak and surplus—is available, steam can be generated and superheated electrically for the needs of the process. This is perhaps the only process for treating coal that is adaptable to all grades of coal when used in conjunction with the major hydro-electric developments.



Condensers at Tacoma plant

The Squarest Year

James Drinkwater, Chicago, says that 1936 was the squarest year because—1936 is the square of 44, 1 is the square of 1, 9 the square of 3, 36 the square of 6, 16 the square of 4, 196 the square of 14, 361 the square of 19, 169 the square of 13, and 961 the square of 31.—*Advertising Age.*

COAL DIVISION Reports

of the AMERICAN MINING CONGRESS

EXTRACTING PILLARS in ROOM and PILLAR MINING

THE seam of coal mined at this operation is found high upon the mountain, about 1,000 ft. vertical distance from the railroad or valley. The maximum overburden is approximately 250 ft. and the coal areas are comparatively small, running in long narrow fingers containing from 100 to 200 acres. The seam has a general dip to the northwest varying from 80 to 100 ft. to the mile and local swags are common.

A typical section of the seam is as follows:

Shale (soft)	4 to 10 ft.
Shale, Laminated	18 to 24 in.
Splint Coal (Hard Coal)	17¾ in.
Bone	1¼
Soft Coal (Gas Coal)	8
Bone	1¾
Splint Coal	14½
Bone (Nigger Head)	1½
Splint Coal	15
Fire Clay Bottom Shale	

The 18 to 24 in. of laminated shale is the exposed top and a great deal of timbering is required to keep it under control. This top generally sounds drummy, but if it is properly timbered it will hold indefinitely. Due to the shallow overburden, surface breaks are frequently encountered. The top at these breaks is unusually bad and headers are required.

Method of Mining

The accompanying sketch shows the method of mining on a typical panel. Due to the nature of the coal areas the face headings are rather long and the cross entries are short. These cross entries are driven to the crop, or within 100 ft. of the outcrop, rooms are then started and the pillars are extracted on the retreat. All rooms and entries are driven on 60-ft. centers. The rooms are driven about 30 ft. wide, leaving a 30-ft. pillar.

The pillars are extracted by driving lifts, varying from 20 to 30 ft. in width, across the ends at right angles to the rooms. When the lift has been completed the roof is allowed to fall by cutting or removing the posts. The roof breaks on the coal in the pillars and the fall line across the rooms is controlled by setting timbers in the room along the desired line. By causing the roof to fall in this manner very little weight goes on the next lift.

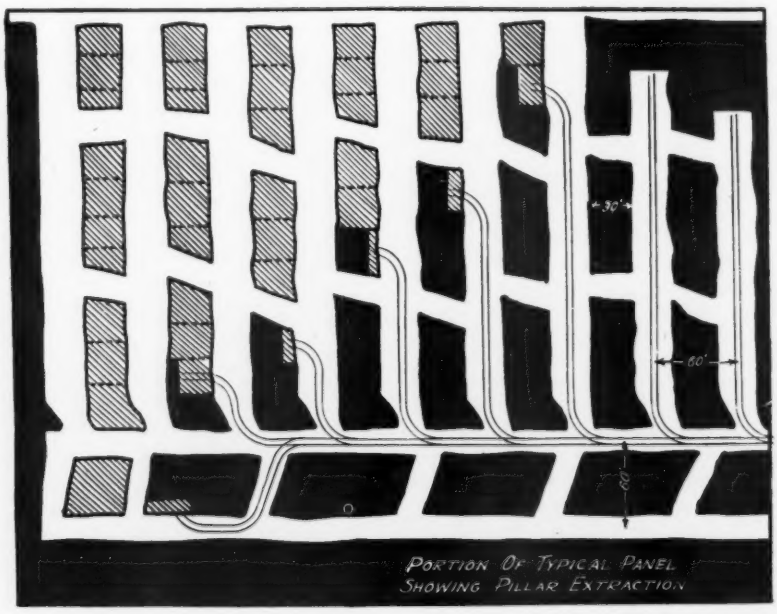
The coal is loaded by hand and hauled by electric locomotives. Undercutting is done with shortwall machines. Practically all the pillar lifts are cut by the mining machines. This method has worked successfully with a recovery of over 90 percent.

Timbering

Timbering is especially important at this operation and receives a great deal of attention. The labor turnover is very small, and each man is well trained in the proper timbering methods. Plenty of timbers are available and the men are required to use them. The timber supply is close to the mine.

Posts are split in triangular cross section with a minimum size 8 in. x 8 in. x 8 in. Due to the supply of timber available at the mine, split caps are used. A special 2 in. x 8 in. cap 24 in. long is also used. Placed extending towards the roadway it covers small fractures and is very effective. However, headers are used if the roof is unusually bad.

Submitted, January, 1938,
DISTRICT COMMITTEE OF
NEW RIVER, WEST VA.



PORTION OF TYPICAL PANEL SHOWING PILLAR EXTRACTION

Fundamental SAFETY RULES For Coal Mining

SAFETY and accident prevention are more and more taking their rightful place near the top of the list of important functions of mine management, not only on account of the human interest, which is of prime importance, but because it is an important element of sound business management and practice. Accident prevention and efficient management go hand in hand. One can not exist without the other.

Realizing that no schedule of activities for the improvement of modern day mine management would be complete that did not embrace this all-important subject, The American Mining Congress set up among the committees of the Coal Division, one on safety, to gather information as to what are considered the most effective means of bringing about an improved accident experience for coal mines in general. This committee circularized progressive coal mining companies all over the United States with the view of obtaining their recommendations as to the important requisites for a successful plan of accident prevention. The response was very gratifying and represented a cross-section of the best thought on mine safety in the country.

The subjects chosen for inclusion in the complete study of mine safety include endorsement and approval of executive officials, executive safety committees, safety departments, local safety units, safety rules, safety meetings, education and instruction, physical examinations, discipline, responsibility for accidents, safety clothing, cooperation of local and governmental safety departments, mine illumination, and dust health hazards.

Safety rules were chosen as the subject of the first detailed study. The Committee decided to develop first a concise set of basic or fundamental safety rules. Again some of the leading coal mining companies were circularized with the view to obtaining from them their recommendations for such a set of fundamental safety rules. From the large and again gratifying number of responses received the Committee on Safety compiled the set of Fundamental Safety Rules shown in the inset on this page. These were unanimously adopted by the Coal Division at its annual meeting in Washington, D. C., December 2, 1937.

For those companies which feel that a set of safety rules should be brief and few in number this set of rules may be adopted with but few elaborations. However, for the benefit of those companies which feel that more detailed mine rules are advisable the Committee on Safety will next endeavor to develop a complete set of detailed mine rules which may with few modifications be adopted and put into effect by the average company. It is planned to have these detailed rules cover safety practices applicable to hand loading mines and also mechanical loading mines. These rules will be developed in the same manner as were the basic rules, and they will thus represent selections from the best obtainable thought on the subject on a nation-wide scale. These detailed mine rules will of course be built around the basic or fundamental safety rules heretofore adopted.

The remaining phases of safety outlined for investigation and report by the Committee will be covered in due time and reports made thereon by this Committee after the completion of its investigation of each subject. All recommendations of the Committee are subject to review by the entire Coal Division and thus they will represent the final and official recommendations of The American Mining Congress for the guidance and information of the industry in general.

If the work of this Committee, when completed, serves to bring about a reduction in the number of accidents occurring in coal mines of this country, then its labors will not have been spent in vain, and the time and effort put forth will have been amply rewarded.

J. J. SELLERS,
Chairman,
Committee on Safety.

+ + +

Fundamental Safety Rules For Coal Mining

1. Strict compliance with State mining laws as a minimum for safety.
2. Immediate reporting and recording of all injuries, however slight.
3. Use of defective tools prohibited.
4. Mines and surface plants to be kept clean, orderly and sufficiently lighted.
5. Only authorized persons shall operate, handle or repair any equipment.
6. All places to be properly posted for safety in accordance with an established minimum.
7. All man-trips to be operated under supervision of a company official.
8. Roof and ribs to be tested by all classes of labor before starting work, and an adequate daily routine of roof testing should be established.
9. Employes should report all unsafe conditions, equipment and practices.
10. All machinery and dangerous places should be carefully guarded.
11. All employes required to stay at the place required by their labor except in case of emergency.
12. No employe permitted to work while under the influence of liquor or other intoxicants or while having same in his possession.
13. Explosives to be transported, stored and shots made up and fired in accordance with established standards.
14. All doors and track switches should be promptly closed by the men who have occasion to open same in the performance of their duties.
15. All underground men, and outside men where necessary, should be required to wear safety hats, hard toe footwear, and should not wear loose fitting clothing.
16. Goggles (corrective features where necessary) or other eye protection shall be worn when working with or adjacent to tools, equipment or materials from which particles may fly.
17. Each employe shall be made acquainted with all safety rules and practices.
18. Rules governing the safe transportation of men, coal and other materials should be adopted.

+ + +

BALLAST and DRAINAGE

For Coal Mine Haulage Roads

THIS report is based on data secured from the inspection of 17 mines in the states of Pennsylvania, West Virginia, Ohio and Illinois including 12 representative mining companies operating 39 bituminous coal mines with a daily capacity of 159,100 tons of coal.

BALLAST

Ballast is the material filled in between and around the ties. Ideal railroad ballast must transfer the applied load over a large surface, hold the ties in place horizontally, carry off the rain water and thereby prevent winter freezing, be such that the ties may be readily adjusted to the true grade line, and it must produce an elastic road bed.

The above statement outlining the requisites of ideal railroad ballast can be applied directly to mine track ballast with the exception of the quality of carrying off rain water and preventing winter freezing, as these conditions are not prevalent underground.

Materials Used

Materials commonly used for mine track ballast are: crushed stone, slag, cinders and mine refuse.

Lime rock ballast is perhaps the best of the "purchased" ballasts. It fulfills all the requirements of a good mine ballast and pulverizes slowly. Its chief objection is high cost.

Sandstone and slag ballast rank next in quality. However, both are subject to relatively rapid disintegration and will absorb water.

Cinders and ashes are less expensive than the above. They absorb water, disintegrate and pack quickly.

Normally the cheapest ballast available is mine refuse: coal or mine rock, available from gobbed piles in crosscuts or break-throughs, or being obtained from rib trimming operations.

At all of the mines of Groups 8-12 inclusive, mine refuse, either coal, top rock or a mixture of the two, was used as ballast. As the haulage roads were ideally dry, this ballast carried track of very good surface and alignment.

That management is questioning the supposed superiority of stone ballast is evidenced by a very interesting experiment now in progress at one of the Group No. 3 mines. Stone, slag and cinders are in use as ballast in separate sections of track under identical conditions of haulage and drainage. The present life of the test has been so short that definite conclusions are not yet possible; but to date, track has held up equally well in each section.

Depth Under Ties

Where head room is essential, a minimum of ballast under the ties is desirable.

Minimum depth of ballast used under the ties varied at different mines, ranging between 3 in. and 6 in., except that at one mine ties were laid directly on a well drained bottom which had before drainage been so soft and wet that shoe-depth mud was common. Within the scope of the committee examination, it was determined that minimum depth of ballast under the ties had no serious effect upon the quality of the finished track. Good and poor track resulted with a minimum of 6 in. under the ties. Good track resulted with a 4 in. minimum, and where ties were laid directly on the bottom, ballast being used under ties only where it was necessary to raise them to true grade. Poor track was observed where a 3 in. minimum was the practice.

Despite the fact that conservation of head room was not necessary in groups 8-12 inclusive, ties were laid directly on the bottom, ballast being used under the ties only where it was necessary to raise them to true grade.

Tamping

It is important that the ties should have a firm support and therefore that the ballast be tamped under the ties, particularly under the ends and immediately under the rails. If the ballast is permitted to remain loose an undulating action in front of the locomotive and each car of the trip results, causing an increased amount of power required to pull the trip.

Tamping has been properly done when the ballast is well packed under the rails and tie ends, and relatively loose under the center of the track. If ballast is tight at the center, either because of improper tamping or on account of the action of the rolling stock, center pack results and misalignment and tie breakage occurs. Remedy for center pack is to jack up the track, loosen the ballast in the center of track and tighten the ballast under the rails and tie ends.

It is important that shortly after new track has been placed in service, a track crew go over same, retamping the ballast and resurfacing all places where subsidence from true grade has occurred. Neglect of early maintenance causes rapid track deterioration and a later increased maintenance cost.

Causes of Deterioration

Irrespective of the material used, due to intermittent loads applied by passing trips, ballast disintegrates, gradually being reduced to a powder. Railroads remedy this condition by periodically removing, cleaning and replacing the ballast, but such solution is impracticable underground.

Tight joints are advisable in mine track. If rail gapping is permitted at joints, jar from the locomotive and car wheels causes a hammering action which quickly destroys the ballast and causes joint settlement.

One operation studied, used steel ties as a gauge maintaining medium, same being substituted for wooden ties, four to a rail length. The turned-down sides of the steel tie prevented proper tamping and action of the rolling stock caused the tie to rapidly destroy the ballast on which it rested.

Mine track ballast is also subjected to another source of contamination, namely from leakage and spillage from mine cars and falls from roof and ribs. Due to the pulverizing of the original ballast and the admixture of coal and roof materials, it is difficult after a few years to determine from surface appearance the type of ballast originally placed. By opening up the ballast we can, in some cases, get the answer, but the original installation is found with voids filled by coal and refuse to the point where resilience and permeability have been greatly reduced. To state the case tersely; after a period of use any of the "purchased" ballasts will become so disintegrated and refuse-contam-

inated as to closely resemble in appearance and properties a ballast of original mine refuse.

Typical Installations

The following ballast installations studied by the committee are worthy of note:

Group No. 3. Traprock ballast. Ten year old installation. Entries well drained. Track alignment and surface very good.

At another Group No. 3 mine an originally well installed traprock ballast road bed was examined, and at a Group No. 4 mine a cinder ballast installation under extra heavy track equipment. Both installations had deteriorated greatly on account of lack of maintenance and proper drainage.

Group No. 6. Mine refuse ballast. Installation four years old. Entries were very wet but are now well drained. Track alignment and surface excellent.

Group No. 7. Slag ballast. Three years old. Gunite entries, tight mine cars, no spillage. Track alignment and surface excellent.

Conclusion

A mine refuse ballast installation is for a time inferior to a "purchased" ballast installation. However, as the "purchased" ballast pulverizes and becomes refuse laden its superior qualifications diminish until mine refuse is practically its equal. Refuse ballast is available without cost and does not require outside handling and subsequent haulage.

Good track is therefore possible with a well drained road bed even though the least expensive of ballasts, mine refuse, is used.

Most of the main line track examined in Groups 8-12, inclusive, showed lack of maintenance, loose bolts and bonds, low joints and need of tie renewals.

Track deteriorates chiefly under use, but deterioration also occurs even while the track is not in use. Main line track maintenance work is done chiefly on working days and is usually neglected on idle days despite the greater efficiency of a crew working, without main line haulage interruptions, on an idle day.

DRAINAGE

Importance

The committee's investigation proved that irrespective of type or amount of ballast, weight of rail or size or length of tie, good track cannot be maintained without provision for adequate drainage. Nor is it sufficient to prepare apparently adequate drainage provisions at the time of installation only, for water may break out in new places either from pillar drawing, old workings or other sources. Drainage must be cared for continuously.

Ditch Location

Whenever possible, main drainage ditches should be located in a parallel entry rather than along the haulageway. One instance in Group 5 was observed where a hand mined entry, approximately four feet wide, was driven the length of the chain pillar for drainage purposes.

Where drainage ditches must be located along the main haulway, the bottom of ballast should be kept above the level of the water and ditches protected from ballast and loose coal falling into them, thus damming the water and flooding the roadbed. The ditch should be kept as close to the track as possible without disturbing the ballast under the ends of the ties. Effective ditching and well drained road bed were observed where the edge of ditch was 24 in. outside the track gauge line.

Where seepage water occurs along the haulway a small ditch should be provided draining to a main ditch if handy. If no main drainage ditch is handy, the small ditch should lead to a catch basin from which the water could be either pumped or bailed into a water car, choice depending upon rapidity of accumulation.

Where a drainage ditch crosses a haulway the water should be conducted under the track by means of tile or a concrete trough.

Tie "Pumping"

When track is not adequately drained and water enters the ballast and road bed, tie "pumping" occurs. Under the action of the rolling stock, pressure is applied to the tie discharging water to the surface and washing the ballast from beneath and around the tie. When the pressure is removed and the flexibility of the rail returns the tie to position, water is sucked from the lower parts of the road bed, fills the gap beneath the tie, and is forced to the surface when the next trip passes. As this water is always mixed with ballast and the soluble portions of the road bed, a void soon develops under the ties, quickly resulting in a low spot in the track, surface bent rails and disturbance of track alignment.

Wet Road Bed Installation

Specific instances of wet road bed installations where adequate drainage facilities had not been provided, were observed as follows:

Mine posts and ties were used to corduroy a wet road bed. Installation proved a failure.

In one very wet condition wood stringers 6 in. x 14 in. x 30 ft. long were placed under the rail to bridge a 400 ft. stretch. This installation has been reasonably successful.

A rip-rap of sandrock was placed on the road bed at one mine but proved unsuccessful. At this same mine sandrock was later placed on edge in the wet spots, covered with ballast and the road bed held reasonably well.

STANDARDS

The establishment of track standards is an important step toward furtherance of good track practices, but does not insure that installations will be made according to specifications set up in the standards. Management may set up all the rules and specifications needed for a superior installation but unless these rules and specifications are rigidly adhered to by the operating officials, an inferior or more costly installation may result. A link should be provided between management and operations, possibly some member of the engineering department who is thoroughly familiar with the standards and correct installation and maintenance methods. This engineer should supervise all track installations, carefully watch maintenance, and coordinate management and operations when any question not covered by standards, or any advisability of digression from standards arises.

Fair average cost of a mile of main line track installed is $10,000. A company having twenty miles of operating track in its mines, would have a track investment of $200,000; sufficient to justify the services of the above mentioned track engineer.

Submitted November 16, 1937.

C. C. HAGENBUCH,
Sub-Committee on Road Beds

Approved and accepted by the Committee on Coal Mine Haulage Roads, December 2, 1937.

R. V. CLAY, *Chairman*

Air foil may also be used as rock duster

New Device For Auxiliary Ventilation In Mines†

- ***Cheap, Simple and Noiseless, Operating on Injector Principle***

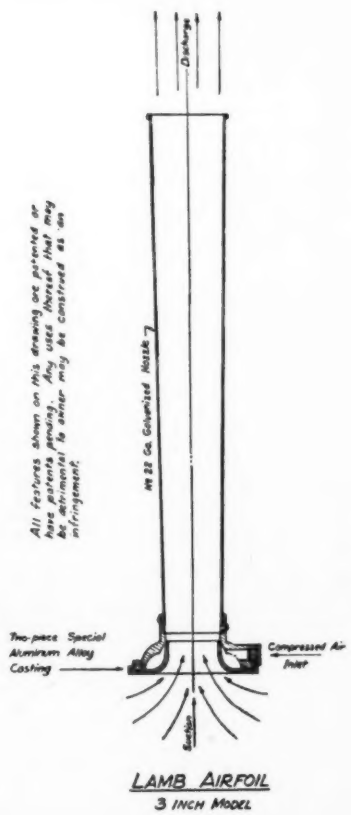
By S. H. ASH
District Engineer
Safety Division, Bureau of Mines
San Francisco, Calif.

THE safety and health of human beings are best served when the air that is breathed is normal as to its quality, is free of dust, is at its optimum value as far as humidity and temperature are concerned, and is breathed at a pressure of one atmosphere. The atmosphere breathed by persons working in confined places such as mines is generally abnormal, and the goal of good ventilation is to provide workmen with air that is nearly normal.

Nothing can supplant the natural coursing of pure air for mine ventilation, but this is not always possible. Aside from its purity, there is nothing in connection with mine air that will tend to preserve the health and efficiency of the miner more than the adequate cooling power of air. In large places such as stopes in metal mines, in long raises and dead ends, and in many other mine conditions, auxiliary ventilation is a necessity. Electrically driven fan installations are always a potential explosion and fire hazard in coal mines and sometimes in other types of mining and tunnel work.

In his pursuit of a device to ventilate confined smoky places penetrated by the firemen of the fire department of San Francisco, Edward Lamb invented a device known as the Lamb air foil. This device was formerly manufactured by the Lamb Air Foil Co., South San Francisco, Calif., but is now obtainable from the Mine Safety Appliances Co., Pittsburgh, Pa. It is being used successfully for ventilating steel plants, tunnels, oil refineries, etc. Tests of its operation indicate its applicability for use in many mines where compressed-air injectors, compressed-air-driven, and electrically driven fans are now being used for auxiliary ventilation.

The device operates on the principle of an injector. Compressed air is admitted through an annular circular opening at the circumference of the throat of a galvanized-iron nozzle. The flow of compressed air induces a flow of air into the base of the nozzle, and both are discharged through the nozzle end. Two sizes of the air foil are now being manufactured—the 3-in. unit and the 6-in. unit. Details of the 3-in. unit are shown in the diagram below. It has a total weight of 5 lb. and consists of a two-piece aluminum-alloy casting containing an air chamber with an annular circular



LAMB AIRFOIL
3 INCH MODEL

† Published by permission of the Director, Bureau of Mines. (Not subject to copyright.)

opening 0.003 in. wide at the throat of the attached galvanized-iron nozzle.

For mine service the air foil is connected by means of a tapering length of pipe to the metal or other type of ventilating duct in use. Although the mechanical efficiency of any compressed-air-operated equipment is low, it must be remembered that the efficiency and utility of different types of equipment are not always compatible. This applies to the injector-type of ventilator. Its safety features, low cost, simplicity, noiseless characteristics, and adaptability are what place this type of equipment in a desirable position for auxiliary ventilation.

In the many hundreds of small metal mines, in the Western States in particular, it offers a means of providing better ventilation after blasting, and will provide more ventilation in many poorly ventilated mines that now depend on natural ventilation and compressed air from units that at best furnish scarcely enough air for drilling. Consumption of compressed air can be reduced by eliminating the need for leaving air-hose valves wide open, and at the same time better ventilation and greater efficiency of the miners will result.

The air foil is most efficient at the lower air pressures, since the ratio of the total quantity of air delivered to the quantity of compressed air required decreases with the increased pressure. Tests indicate that under some conditions these units will give 15 cu. ft. of free air per minute for each cubic foot of compressed air used at pressures below 35 lb. This is a distinct advantage, since available air pressure is usually relatively low. The induction ratio of the 6-in. unit is lower than that of the 3-in. unit, indicating that for mine use the 3-in. units appear to be the most practical.

Aside from its use in ventilating, the air foil offers an inexpensive and simple means for rock dusting in the face region or in mines where a rock-duster can not be used for physical reasons or can not be obtained for economic reasons. Rock dust can be fed by hand or shovel at the intake end. Operating with low air pressure, the units will dust immediate faces adequately, while with high pressure the dust can easily be carried considerable distances over gobs and into out-of-the-way places.

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COAL PRICES and MARKETING RULES Revoked by Commission

ON February 23 the National Bituminous Coal Commission adopted the following resolution:

WHEREAS, the National Bituminous Coal Commission in conformity with the provisions of the Bituminous Coal Act of 1937, and in order to stabilize conditions surrounding the production and distribution of coal as intended by the law, has by its formal orders established and made effective minimum prices and marketing rules and regulations in the several districts throughout the United States, and

WHEREAS, such prices and marketing rules and regulations as established by the Commission in conformity with the standards prescribed in the Act and in accordance with the procedure therein outlined, have been subjected to legal attack in proceedings instituted by the Consumers' Counsel, by the Association of American Railroads, by the City of Cleveland, the Manufacturers Association of New York State and others, and

WHEREAS, as a result of temporary orders issued by courts in these proceedings, advantages in the buying of coal have been conferred upon certain railroads and other public utilities as well as upon numerous other large consumers of coal, with the result that consumers of coal who have not taken court action, as well as the overwhelming majority of coal producers who are supporting this Commission and the prices established by it, will be placed at great disadvantage if the minimum prices now established are kept in effect and

WHEREAS, it is the judgment of this Commission that the public interest will best be served by a revocation of the minimum prices and marketing rules and regulations, this to be followed by the re-establishment of such prices and regulations as promptly as can be done and in such manner as to avoid, wherever possible, technical objections which have been interposed by the Consumers' Counsel and others.

NOW, THEREFORE, BE IT RESOLVED, that the minimum prices and marketing rules and regulations heretofore established by this Commission and now in effect be, and the same are hereby revoked, effective as of the 25th day of February, 1938, at 11.59 p.m., and that an appropriate order or orders be entered; Provided, however, that nothing herein contained shall in anywise suspend or affect other orders of this Commission not pertaining to minimum prices and marketing rules and regulations.

RESOLVED, That this Commission immediately proceed to the re-establishment of minimum prices and marketing rules and regulations in conformity with a program to be adopted by the Commission with the advice of its General Counsel.

A full account of events leading up to revocation of the price schedules and marketing rules may be found on page 62.

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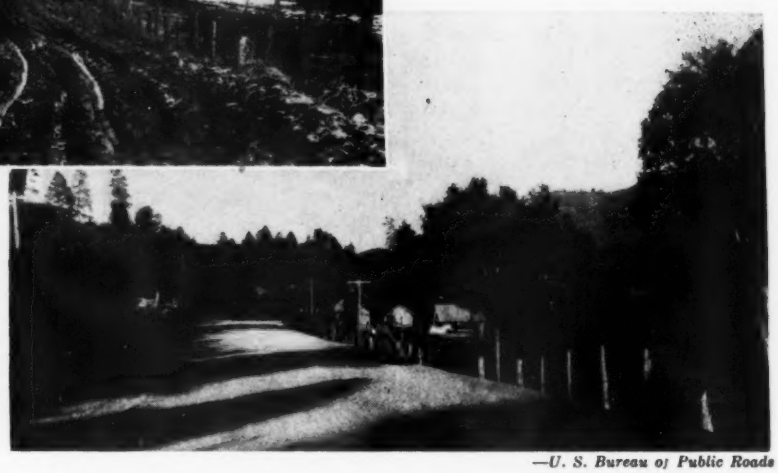
—U. S. Bureau of Public Roads



—U. S. Bureau of Public Roads

A Colorado road before and after improvement

ROADS TO MINING AREAS†

- ***An Appeal for More Equitable Consideration to the Mining Industry of Federal Aid in Building Roads***

By FRANCIS A. THOMSON
President
Montana School of Mines
Butte, Mont.

THE development and general utilization of the motor truck has nowhere made a greater change in transportation methods than in the mineral industry. Twenty years ago wagons hauled by 4 to 20 horses had to serve for small mines; whereas wire-rope tramways and narrow-gauge railroads with steep grades, sharp curves, and "shay" locomotives served for operations of intermediate tonnage.

Today the motor truck has replaced these modes of transport in all but a few special cases.

But the motor truck, for efficient and economical operation, demands a fairly good road. In my salad days any kind of wide trail on the mountainside over which four horses, by dint of struggle stimulated by a blasphemous and obscene skinner, could haul an empty wagon up the hill was considered a "road." Brakes, roughlocks, or a good-sized log chained on behind, served to help the breeching resist the load as the wagon careened down the hill loaded with ore or concentrate.

I have often thought of the terrific cost in horseflesh of such methods, and have wondered whether the type of roads now needed for motor trucks would not have paid for themselves even before the advent of the internal-combustion-engine-horse.

Motor Truck Now Standard Mine Transportation

However that may be, the motor truck is now the standard accepted means of transporting ore, machinery, and supplies for practically all mining operations not served by a standard-gauge railroad, or in a few fortunate instances by water transport.

Much of the distance from mine to town, to sampler, custom mill or custom smelter is provided for by oiled-

† Presented to Annual Metal Mining Convention, Western Division, the American Mining Congress, Salt Lake City, Utah, September 7, 1937.

surface Federal-aid highways along which the truck spins merrily at the speed of a passenger train. But there is usually a gap of 5 to 20 miles which separates the mining camp from the main "drag," and it is with this part of the trip that the miners of the West are primarily concerned.

The rapidly developed and remarkable Federal-aid highway system which stretches over the entire nation like a gigantic cobweb has been supplemented by "feeder" roads built sometimes with Federal money exclusively, sometimes with State money exclusively, and sometimes on a matching basis by State and Federal money jointly. However, the assumption—politically made and probably politically justified—seems always to be that these "market" roads or feeder roads were built for the benefit of the farmer, and the miner in most States has been given practically no consideration whatever in the expenditure of moneys for feeder roads.

Mining Areas in National Forests

Also militating against the miner in this matter is the fact that naturally most western metal mines are in the mountainous areas, and equally naturally the mountainous areas are more or less forested and have hence been included within the boundaries of the national forests. Now the U. S. Forest Service has advanced since it was established under the aegis of Gifford Pinchot in 1907 from a position of active hostility to the mineral industry, to a position of benevolent tolerance and in many instances of actual friendliness.

Nevertheless, it is to be expected that the considerable sums of money which have been made available for construction of roads in the national forests should be spent by the Forest Service—and well spent, too, in my observation—in the building of roads primarily for the purposes of the service itself, and not for the convenience of prospectors and mine operators within the national forests. As I have indicated and desire to emphasize, no criticism can legitimately be levelled at the Forest Service for following this procedure. The net result of all these factors has been that literally billions of dollars have been available for building roads for almost every conceivable purpose except for the assistance and development of outlying mining camps.

No Help From Relief Agencies

When CWA, FERA, and WPA came along in due succession, we thought the solution of this problem was at hand; but alas! In spite of the best will in the world on the part of State and Federal administrators, these agencies offered no solution. The reason is simple and obvious—the remote areas in which these roads are needed are naturally the areas in which no relief labor is available. The few inhabitants are still, thank God, of sturdy, individualistic American stock, who prefer to pack their beans and bacon on burro, or horseback, or on their own stout shoulders, rather than to go on relief. The Federal relief agencies have no provision for establishing road camps, or for transporting relief "clients" (what a beautiful euphemism!) to remote localities; and if they had, the men would be apart from their families, and the per capita earnings are not sufficient to support a man and his family in separate establishments.

Thus the only solution, therefore, would appear to be specific appropriation by Congress of money to be spent solely and exclusively for the building of roads to those mining areas, whose development or potentialities appear to competent authority to justify such expenditure.

Proposed Federal Legislation

The first of a series of such bills was H. R. 6098, introduced in the Seventy-fourth Congress by Hon. Compton I. White, of Idaho. This bill and its successor, H. R. 115 in the Seventy-fifth Congress, also by Mr. White, included an appropriation of $1,500,000 for each of two years

—U. S. Bureau of Public Roads

A mountain road in Berthoud Pass, Colo., before and after improvement

for mining-camp roads. Section 1 of each of the bills provides:

"That when an application is made to the Secretary of the Interior by any owner and/or operator of any mineral or placer claim, or group of mineral or placer claims, located within a national forest of the United States, for the construction of a road and bridges necessary for the transportation of mineral products of, or supplies for, such mineral or placer claims, it shall be the duty of the Secretary of the Interior to cause an examination of said mineral or placer claims by a qualified representative of the United States Geological Survey, and when it is shown to the satisfaction of the Secretary of the Interior that development on a mineral or placer claim or group of claims situated within any national forest of the United States has proved the existence of mineral or ore bodies in quantity and commercial value sufficient to warrant the expenditure of public moneys for the construction of roads and bridges to facilitate the operation and development of such mineral or placer claims, the Secretary of Agriculture is authorized to provide the construction, reconstruction, or repair of roads, trails, and bridges within the boundaries of any national forest in aid of the development and operation of such mineral claims."

On its first introduction as H. R. 6098, this bill was referred to the Committee on Public Lands and by this committee to the Department of Agriculture. In the Department's reply it was stated that the Acting Director of the Budget had advised that the proposed expenditure would be in conflict with the financial program of the President, and the bill died in committee.

An almost identical fate appears to have overtaken Congressman White's proposal reintroduced in the present Congress as H. R. 115.

Objections From Interior Department

In a letter, dated February 24, 1937, the Acting Secretary of the Interior, Mr. Charles West, wrote to the chairman of the Committee on Public Lands stating the objection of the Department to the enactment of the bill, as follows:

"In the language of the bill, there is the plain implication that the proven presence of mineral or ore bodies in quantity and of commercial value is sufficient in itself to warrant the expenditure of public money to provide ways for their transportation, and upon the disclosure of such conditions alone, the applicant is entitled to the grant of his application.

—U. S. Bureau of Public Roads

Troublesome transportation over an unimproved mountain road in Utah

"In a broad sense, if ores are of commercial value, they can be mined, transported, and marketed at a profit, and if they can be so mined, transported, and marketed, no reason is seen for the use of public funds to increase the profits of the owner of the mine.

"But assuming that what is meant is if minerals exist in quantity and commercial grade they can be produced at a profit, provided that the Government constructs and maintains roads and bridges to transport them within the forest, still I do not see the warrant for the expenditure of public money for such purpose unless a satisfactory showing is made that there is a public demand for the mineral from the mine to which the road is to be built, and like assurance that the road would be used for the transportation of minerals and supplies for a sufficient length of time to justify the cost of construction thereof.

—U. S. Bureau of Public Roads

Building a mountain road in Montana

"Many factors, besides mere mineralogical conditions, would have to be considered as a basis for intelligent decision. Among these may be mentioned an inquiry whether the operator of the mine has the capital, the capacity, the mining facilities and the bona fide purpose to mine and market the deposit; whether the existing market conditions would probably justify the throwing on the market of the additional product, or stated differently, whether it is in the interest of sound conservation of mineral resources and economic policy to promote the mining of the particular resource at public expense, for it is not believed that any good purpose would be subserved in dumping unneeded mineral on a glutted or depressed market. An inquiry would also be pertinent, whether the contemplated scale of operations at the mine justified the cost of the building of the roads and bridges, which would entail the formulation and comparison of estimates of cost of the road and probable production of the mine.

"It may be doubted whether the bill confers upon the Secretary the latitude of discretion above indicated and thought necessary for its proper administration. But unless such discretion can be exercised, there is a high probability in many instances that roads and bridges would be built for mines that would not be found

(*Concluded on page 65*)

Meeting of the National Program Committee at Cincinnati, January 28. Seated (left to right): A. L. Johnston, J. C. Wilson, L. C. Campbell, R. L. Ireland, Jr., chairman, Charles C. Whaley, Julian D. Conover, and W. E. E. Koepler. Standing (left to right): Harry La Viers, P. D. McMurrer, Carl T. Hayden, George T. Stevens, G. B. Southward, James Hyslop, A. J. Ruffini, Albert Gately, and Richard J. Lund

COAL CONVENTION PLANS PROGRESS

WORKING diligently on plans for the Annual Coal Mining Convention and Exposition to be held in Cincinnati May 2-6, which, unlike Topsy, doesn't "just grow," the various committees responsible for development of the countless features that are embodied in this parade of progress in the coal industry already have made considerable headway.

Program

The National Program Committee, under the chairmanship of R. L. Ireland, Jr., president of the Hanna Coal Company of Ohio, met in Cincinnati January 28 and, after careful culling and discussion, formulated general plans for the program and selected subjects of primary importance to the industry from among the hundreds of suggested topics that had been assembled. State chairmen were very well represented as shown in the above picture, and several manufacturers were also present to lend their valuable assistance.

Of particular importance was the action taken by the committee in limiting the number of papers to be presented at each session to an average of four. This represents a considerable reduction from the number given at previous meetings, but it was the consensus of those present that such a procedure would permit adequate time for thorough discussions from the floor of each paper after being given—a highly desirable feature. Considerable time was devoted to thorough analysis of ways and means of promoting lively discussion, which will be presented extemporaneously or from notes with the aid of a discussion leader for each session.

Of equal if not greater import was the decision to devote several sessions to presentation of special subjects, rather than scatter papers pertaining to one general phase of the industry through several meetings. This *classified sessions* arrangement should go a long way in stimulating attendance and interest in the convention, since mine executives will now be enabled to lay plans to send their men to the meetings at the time of optimum benefit to them.

The following is an outline of the program, showing subjects to be presented.

MONDAY MORNING: Methods of Breaking Down Coal at Face; Types of Cutting Bits; and Modern Ventilating Installations.

MONDAY AFTERNOON (Session devoted to surface preparation): Crushing and Sizing for Stoker Fuel; Practical Limits of Slate Removal; Methods of Drying Washed Coal; and De-Dusting Coal.

TUESDAY MORNING: New features in Haulage Equipment Design; Beams for Roof Support—(a) Treated Timbers, and (b) Aluminum Alloy; New Equipment and Methods in Strip Mining; and Pumping Large Volumes of Water.

TUESDAY AFTERNOON (Session devoted to conveyor mining): Problems to be Considered before Installing Conveyors; Car Haulage and Moving Equipment; Power Distribution for Conveyor Installation; and Mining Systems for Conveyors.

WEDNESDAY MORNING (Session devoted to mobile loading machines): Problems to be Considered before Installing Mechanical Loaders; Problems in Cleaning and Degradation; Transportation Problems with Mechanical Loaders; and Problems in Mining Thin Seams with Mechanical Loading.

WEDNESDAY AFTERNOON (Session devoted to safety): Dramatization of Safety; Safety Programs; Reducing Haulage and Machine Accidents; and Safety Contests (intra-company).

THURSDAY MORNING: Equipment Repairs and Shop Practice; Underground Power Distribution; and Modern Shaft Sinking.

THURSDAY AFTERNOON (Session devoted to management and supervision): Budget Control of Costs; Personnel Management; Personnel Training; and Responsibility of Mine Officials.

The above subjects, all of which are of vital importance to present-day coal mining, will be presented by authorities in each particular phase of the industry involved. It is too early to name the authors.

LOUIS WARE

Arrangements

The chairmen and vice chairmen of the various committees in charge of arrangements, headed by Louis Ware, president, United Electric Coal Cos., have been selected as follows:

Attendance—C. F. Hamilton, executive vice president, Binkley Coal Co., chairman, and Arthur S. Knoizen, Joy Mfg. Co., vice chairman.

Publicity—W. W. Rodgers, Westinghouse Elec. & Mfg. Co., chairman, and John Coakley, Thomas A. Edison, Inc., vice chairman.

Entertainment—John K. McCabe, Hercules Powder Co., chairman, and L. F. Crouse, Monroe Coal Mining Co., vice chairman.

Contests—V. J. Nolan, National Carbon Co., chairman, and C. B. Officer, Sullivan Machinery Co., vice chairman.

Floor—E. B. Agee, Youngstown Mines Corp, chairman, and C. W. Gibbs, Harwick Coal & Coke Co., vice chairman.

Welcoming—E. R. Price, Inland Steel Co., chairman.

A meeting of the Committee on Arrangements was held at the Waldorf-Astoria in New York February 18 at which general plans were thoroughly discussed and steps taken to insure that those going to Cincinnati will not have a chance to spend a single dull moment during their stay there.

Exposition

A virtual sell-out of space at Music Hall at this early date is fitting testimonial to the keen interest in the Exposition being displayed by manufacturers of mining equipment and supplies. It will truly be a parade of progress, exemplifying the last work in efficient machinery and supplies necessary to meet present-day conditions in the coal mining industry.

WM. E. GOODMAN
Chairman

Headed by William E. Goodman, president, the Goodman Manufacturing Company, the Manufacturers Division of the American Mining Congress has cooperated in many ways toward making the 1938 show second to none. Vice chairmen of this division are: R. L. Cox, Jeffrey Manufacturing Company; Frank E. Mueller, Roberts and Schaefer Company; and Arthur S. Knoizen, Joy Manufacturing Company.

So favorable were comments on the success of the "exhibitors session" on Friday morning of last year's exposition that this plan will be repeated this year. No papers are given on that day, and convention visitors will be entirely free to inspect the exhibits and talk over perplexing problems with the experts in charge of each.

Mining executives will find this a particularly appropriate time to see the exposition, following the Thursday afternoon session on management and supervision, and the banquet that night.

L. W. Shugg, General Electric Company, is again lending his able assistance as Director of Exhibits.

The newly organized Coal Division of the American Mining Congress, described in detail on the following pages, is now functioning actively, and will be live participants in all the Convention affairs.

All in all, it's going to be a real bang-up meeting. WE'LL SEE YOU THERE!

Officers of the Manufacturers Division

R. L. COX
Vice Chairman

FRANK E. MUELLER
Vice Chairman

A. S. KNOIZEN
Vice Chairman

A. J. MUSSER
Clearfield Bituminous Coal Corp.

E. R. PRICE
Inland Steel Company

C. A. GARNER
Jeddo-Highland Coal Company

C. E. ABBOTT
Tenn. Coal, Iron & R. R. Company

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Island C

ADVISO

E. J. NEWBAKER
Chairman
The Berwind-White Coal Mng. Co.

THE Coal Division of the American Mining Congress, as recommended and authorized by the Board of Directors at their Annual Meeting in December, 1937, has been formally organized and is now starting to function. The Division is primarily composed of what was formerly the Coal Operators Committees, and the action of the Directors, in forming these committees into a permanent organization, was in recognition of the value to the coal industry of the work that they are doing. The main purpose of the Division is to conduct a series of studies and reports on operating methods, systems and practices, with a view to determining the most improved and efficient ways of meeting the various mining conditions that are encountered in different fields.

Under the by-laws of the new Division there is an Advisory Council and a Board of Governors to direct the work of the Committees. The Advisory Council is composed of twenty-one coal executives who will consult and assist in the selection of the phases of mining to be studied, the general type of information to be gathered and the nature of the reports to be published. The Board of Governors is composed of the Chairmen of the several Project and District Committees, and through the meetings of the Board, contacts can be maintained between the various committees so that their activities can be properly coordinated.

For a number of years it has been a definite policy of the American Mining Congress to encourage the development of coal mine modernization and to bring about a closer contact between the operating men of the various fields and

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MORONI HEINER
Utah Fuel Company

D. A. REED
Consolidation Coal Company

D. R. SWEM
Northwestern Improvement Co

LOUIS WARE

T.

R. E. SALVATI
Island Creek Coal Company

P. C. THOMAS
Koppers Coal Company

K. A. SPENCER
Pittsburg & Midway Coal Mng. Co.

EUGENE MCAULIFFE
Union Pacific Coal Company

L. E. YOUNG
Pittsburgh Coal Company

SORY COUNCIL

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COAL DIVISION OF THE MERICAN MINING CONGRESS

districts, thus effectively promoting a healthy interchange of ideas on new practices and equipment. The Annual Coal Convention and Exposition has been a very constructive factor in the accomplishment of this objective; but with the growth of machine methods, so many new things are coming into use that a meeting once a year is not sufficient to keep operating men in touch with this modernization movement.

The first effort made by the American Mining Congress to provide for coal operating men a constant source of information on these problems was the organization of the Coal Operators Committees. These are composed of approximately 300 operators and manufacturers, located in all of the fields of the United States. This organization was formed about three years ago, and soon thereafter the committees made a series of surveys showing the general practices used by a large number of representative companies. However, certain practices are more productive of results than others, and after several reports were completed it was decided that their scope should be amplified so as to show operating details.

In preparing the reports that are now under way, the committees recognize the fact that there is no single best way of performing any of the operations of mining and that no one type of equipment is best suited for all conditions. It is therefore not the purpose of the reports to recommend for or against any operating method, but rather to determine and set forth the underlying factors that have been responsible for successful methods developed for various conditions. At present seven major studies are being made.

GEO. B. HARRINGTON
Chicago, Wilmington & Franklin Coal Co.

S. B. JOHNSON
Lorain Coal & Dock Company

T. J. THOMAS

W. J. JENKINS

E. P. HUMPHREY
Stonega Coke & Coal Co.

GILBERT C. DAVIS
Phelps Dodge Corporation

T. D. LEWIS
Lehigh Navigation Coal Co.

JOS. L. OSLER
Blackwood Coal & Coke Co.

R. G. PFAHLER
The Berwind-White Coal Mng. Co.

L. B. ABBOTT
Consolidation Coal Co.

A. W. HESSE
The Buckeye Coal Co.

FRANK G. SMITH
Sunday Creek Coal Co.

BOARD OF GOVERN

The *Committee on Haulage Roads* has completed a series of reports on methods of track construction. These include Specifications for Main Haulage Ties, Methods and Material for Ballast, Road Bed Construction and Standard Drawings for Frogs, Switches and Turnouts that have already been adopted by the leading manufacturers of track equipment. In modern operations the underground haulage system of a coal mine is comparable to railroad operation, and the construction of the track and road bed is fast approaching railroad specifications. This committee was under the chairmanship of R. V. Clay, vice president, The Hanna Coal Company of Ohio, and their completed report is soon to be published.

The *Committee on Surface Preparation* is studying and reporting on methods of preparing coal. A preliminary report on De-Watering Washed Coal has already been completed and published in the Mining Congress Journal, and a report on Screening is now under way. This committee is under the chairmanship of T. W. Guy, consulting engineer, Charleston, West Virginia.

The *Committee on Conveyor Mining* is reporting on operating phases of underground conveyors. A standard Time Study form has been designed and is now being used by a large number of coal companies. The next study is to prepare a standard form for daily reports for recording the different items of labor that enter into an operation. This committee is under the chairmanship of T. F. McCarthy, general superintendent, The Clearfield Bituminous Coal Corporation, Indiana, Penna.

The *Committee on Safety* has completed a set of standard and basic fundamental rules for safety in mining. These rules are designed to serve as a guide for companies in making up their individual regulations covering safe operating practices. The next study, which is now under way, is the formation of a standard set of safety operating rules. This committee is under the chairmanship of J. J. Sellers, vice president, Virginia Iron, Coal & Coke Company, Roanoke, Virginia.

The *Committee on Mining Systems* has completed a series of reports showing typical methods for mining and extracting pillars as developed for varying seam conditions and depths of cover. The next study, which is now being started, is to show systems that are in use with underground conveyors. This committee is under the chairmanship of Frank G. Smith, assistant general superintendent, Sunday Creek Coal Company, Nelsonville, Ohio.

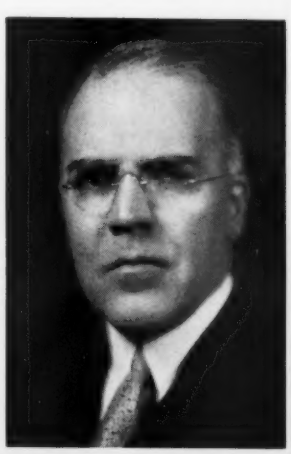
The *Committee on Mechanical Loading* completed several District Reports showing the general methods used with mobile machines in different fields. A study is now under way to design a series of standard daily report forms that can be used by operating companies, as the adoption of uniform methods of keeping records on performances and results will be of great help in comparing the efficiencies between different types of operations. This committee is under the chairmanship of Newell G. Alford, consulting engineer, Eavenson, Alford & Auchmuty, Pittsburgh, Pennsylvania.

The *Committee on Underground Power* has completed a Report on Direct Current Distribution Lines which has been published in booklet form.

W. J. BORRIES
Dawson-Daylight Coal Co.

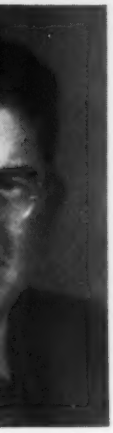
R. H. MORRIS
Gauley Mountain Coal Co.

J. J. SELLERS
Virginia Iron, Coal & Coke Co.



NEWELL G. ALFORD
Cons. Engr., Pittsburgh, Pa.

T. F. MCCARTHY
Clearfield Bituminous Coal Corp.



MITH
Coal Co.

C. C. BALLARD
The New River Co.

C. W. GIBBS
Harwick Coal & Coke Co.

H. B. HUSBAND
Chesapeake & Ohio Rwy. Co.

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booklet form.

This report was made by the Subcommittee on Distribution Lines under the chairmanship of M. W. Horgan, Monongahela West Penn Public Service Company, Fairmont, West Virginia. Two additional studies are now under way, one on Substations and another on Specifications for Installing Underground Lines and Cables. This committee is under the chairmanship of Carl Lee, electrical engineer, Peabody Coal Company, Chicago, Illinois, with C. C. Ballard, master mechanic, New River Coal Company, New River, West Virginia, as vice chairman.

The work of the Project Committees is supplemented and assisted by the several District Committees which furnish information and data from their fields. The District Committees cover the principal coal mining states in the Appalachian Area, the Central States and the Rocky Mountain District in the West.

The coal mines of the United States are engaged in a widespread program of modernization. Methods and equipment which have been in use for a number of years are giving place to a more advanced and a more scientific procedure. This results in better working conditions underground, and the elimination of much of the hardships and drudgery that formerly existed and through this movement, coal mining is fast becoming an attractive employment under safe and desirable surroundings.

Glenn B. Southmayd

CARTHY
hous Coal Corp.

T. W. GUY
Cons. Engr., Charleston, W. Va.

CARL LEE
Peabody Coal Co.

GEO. B. PRYDE
Union Pacific Coal Co.

Some Points in the Practical Application of the SECURITIES ACT†

By HENRY B. FERNALD
DONALD A. CALLAHAN
BLISS MOORE
ROBERT S. PALMER
CARL TRAUERMAN

By HENRY B. FERNALD
Loomis, Suffern and Fernald
New York City

IN JOINING in this discussion of the Securities Act and the requirements under it, I shall try briefly to state a few points which stand strongly in my mind:

1. *As to Truth About Securities:*

It is popular to refer to the Act as the "Truth about Securities Act" and to brand any criticism of the law, the regulations or the Commission's requirements as representing opposition to telling the truth or justification of departures from the truth. We may grant that the purpose and intent of Congress in passing the Act, of the Commission in issuing its regulations and of its examiners in reviewing registration statements, is to have the truth told about securities. Yet we may recognize, as do our courts, that a zeal for truth should not run afield into that which is irrelevant, immaterial and inconsequential.

We make no defense of untruths or misrepresentations; and we show no lack of zeal for fair, honest, informative statements, when we point out that a true statement may be most misleading because of the manner and context of its presentation and the implication which it thus carries. The statement of irrelevant facts as if they were of importance and the overemphasis of points which are relatively immaterial tends towards misrepresentation.

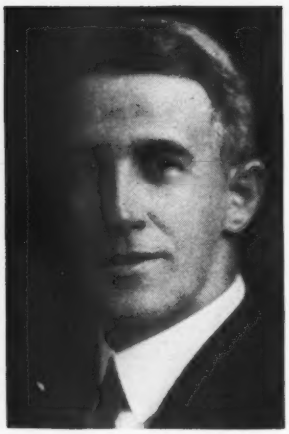
Let me illustrate this with the old story of the captain who, when the mate was drunk, entered in the ship's log, "The mate was drunk today." The mate again on duty next day saw it and protested. The captain said, "It's true, isn't it?" The mate replied, "Yes, but——," and the captain interrupted, "Then let it stand." The following day the captain found in the log the entry, "The captain was sober today." He thundered at the mate, "What do you mean by such an entry?" and the mate asked, "It's true, isn't it?" The captain said, "Yes, but——" and the mate answered, "Then let it stand."

The registration statement presumably is intended to give the prospective investor information pertinent to his determination of the investment quality of the securities offered. Naturally, we would expect it to confine itself to that information, giving much weight to those points of major importance and little weight to those of minor importance. Yet we find that the registration statements required give much space and much emphasis to details to which a wise investor attaches little, if any, weight. In trying to determine investments for myself, I find that I brush aside as irrelevant and immaterial most of the information included in the registration statements, and I find that the mass of such material obscures and throws out of perspective the information which I really want. It is a terrible job to take a dozen or more registration statements or prospectuses and try to wade through them to find out the few important facts they contain which might guide in determining the desirability of the investments. I think all the experienced, successful investors I know and with whom I have discussed this have abandoned any attempt to do so. I find them generally in agreement that our registration statements and prospectuses are far less valuable to the investor than the British prospectuses.

We may grant that the wise, experienced investor will simply find the cluttering up of the statements with immaterial details a nuisance and will not be misled in that way. It is not clear, however, that investors who are less wise and experienced may not be misled and that the setting up of such requirements may not build up false standards which in the end will hurt more than help the investing public. I need not give a long line of illustrations. Take any set of registration statements filed; go through with a blue pencil and mark out everything in that statement that you do not consider as of value to you in passing on the investment quality of the securities offered and you will probably find that you have marked out most of what is contained therein.

You may find only three or four lines on an entire page that you consider to be of value and you will wish you could have seen these without having to wade through all the rest of the statement. You may find entire schedules that you mark out as of no importance. Yet to the uninformed person the fact that these are presented at length in the registration statement carries the implication that they are of importance in determining the desirability of the investment. All of this does tend to set up false standards which will hurt rather than help the ordinary investor.

† The following papers present discussion of Mr. Neff's paper on "Application of the Securities Act to the Mining Industry," given at Metal Mining Convention, Western Division, The American Mining Congress, Salt Lake City, Utah, September 8, 1937.



HENRY B. FERNALD

2. *As to Over-Emphasis on the Past:*

I believe the value of the past is greatly over-emphasized in these statements and that they give too little weight to the future. This over-emphasis of the past was the essential fault of most investors in 1928 and 1929. This was notably true of railroad securities. Their accounts and statements were prepared under Interstate Commerce regulations and in the majority of cases there has never been any charge that their accounts did not properly reflect the facts. They were making high earnings in 1928. On the basis of such earnings their stocks were bought at high prices, which future earnings have not justified. The same is true of banks and of insurance companies, whose accounts are likewise under government supervision. In each case the value of the securities was not to be determined by an exact statement of earnings of the past but by a proper estimate of the earnings of the future. The earning power of the past may be and is a valuable basis for starting to make future estimates. It is a secondary, rather than a primary, factor in judging security values.

As an accountant, I am a believer in the value of proper accounting statements. Their value is, however, confined within the limits of their relevancy to the question at issue. Where the investor's concern is primarily with the prospect of future earnings, the accounting statements have their value as they bear on that question. If we feel that conditions will be the same in the future as in the past, we can attach great weight to the accounts of the past as indicating the probabilities for the future, but that weight is lost as we look forward to future conditions different from those of the past. We are not fair to investors if we make them feel that a mass of information as to the past will take the place of reasonable judgment as to the future, for it is the future, rather than the past, which is important.

As I have been considering these questions from my own standpoint as an investor, I find that I am not looking so much for a mass of additional detailed information as to the past but I am looking as to the probable events of the future. Among the questions which stand uppermost in my mind are those concerning government action, such as taxes, tariffs, monetary policy, labor conditions, price control and other features of business regulation. I find these are the major questions that I must try to answer for myself to determine the wisdom of an investment. I cannot ignore them but I find nothing in the registration statements which will help me. The registering corporation does not know the answer to these questions and apparently there is no one else by whom they can be answered.

Perhaps something might be accomplished if we could have printed on the front of every prospectus, in type as large as that which is used in the disclaimer of the Commission's responsibility, a similar disclaimer to be recognized as that of the corporation and of the government, in wording perhaps similar to that which appears buried in the statements of many corporations, somewhat as follows:

"No attempt is made herein to estimate the effect on the business of the Company and its subsidiaries of statutory enactments and regulations thereunder, of changes in tariffs, economic conditions, labor relations, technique of manufacturing its products, industrial practices affecting its products, and other conditions, of competition by competitors, of increases in taxation and cost of raw materials and labor, or of price changes, some of which factors may have an important bearing on the operations and earnings of the Company."

I was reviewing a prospectus of 47 pages in which a statement in substantially these words is made as a single paragraph on page 6. It is probably more important that the investor should understand that paragraph than that he should read all the rest of the 47 pages. Certainly it is far more important for him to understand that, than for him to know that against an $8,000,000 surplus there were charges for additional State taxes of $21.58 in one year and $488 in another, or to know that a total of current assets of $44,000,000 included a $5,000 account receivable from a subsidiary company not consolidated.

Let me here note that I am much more concerned about how a mine is going to be affected by the undistributed profits tax than I am about the cost of the mine to some prior purchaser. A former purchaser may have paid $10,000 for it and it may be worth $100,000 today; or the former purchaser may have paid $100,000 for it and it may be worth nothing today. Its value today is not determined by what was paid for it at some time in the past. But we cannot close our eyes to the fact that many mining prospects, well worth development, may be rendered valueless if our present Undistributed Profits Tax is continued in its present form.

It is a matter of perspective, and I think we are having a vastly distorted perspective given us in the statement of a multitude of facts and figures which have no real bearing on the important problems which the investor should be considering.

3. *As to Difficulty and Cost:*

It is not enough that the simple truth should be fairly and reasonably told by a plain, honest man about the securities he wishes to offer for sale. There are technicalities and definitions of the law, regulations, and decisions to be considered. As to the simple form A-O-1 there is an "Instruction Book" of 16 pages, and in addition to all it states in itself it carries references to "Regulation C," to Rules 400, 455, 650, 651, 670, 671, 730 and 821 (a) as well as references to the Securities Act and the Securities Exchange Act. As to Form 10-K, the 37-page "Instruction Book" includes references to Rules A2, JB4, KA1, UB2, etc. In each case, further search must be made for possible amendments, such as are likely at any time to appear. Even if all of these have been fully considered, there is no assurance that an examiner for the Commission may not discover some point in the registration statement not previously ruled on, which will require some present decision.

Attorneys, accountants, engineers and others, qualified in this particular field, must be employed.

All of this combines to make the preparation of a registration statement a difficult and expensive procedure.

Conclusion

In conclusion let me say this. I think the Commission itself could go

far in remedying, or at least improving, the features I have criticised, even without amendment of the law. If, however, the Commission should find that changes in the law seemed necessary to meet the situation, I think it could state the changes required, with good prospect that appropriate amendment of the law would then be made.

By D. A. CALLAHAN
Wallace, Idaho

THE discovery and development of mineral wealth is still a pioneering business. While much of its picturesque environment has disappeared, there still remain many of the characteristics which marked the conquering of the undeveloped areas of America.

These characteristics are faith, courage and dogged determination to overcome obstacles. We might call these the three graces of pioneering, and having drawn the simile we might go still further and say that the greatest of these is faith. For the men who have discovered the treasures of the hills in the past have literally possessed that faith which moved mountains. They possessed a faith such as St. Paul, for they believed in that which neither the eye had seen nor the ear heard. The treasures beneath the surface of the earth were as far removed from observation through the senses as were the glories of Heaven to the Apostle to the Gentiles.

That kind of faith must still animate those who would add new stores of mineral wealth to the world's economy. If we are to set up new reserves to take the place of those which industry is using up so rapidly we must recognize the part which the prospector must still play. We must begin to realize that we cannot standardize his invaluable efforts. We must study his problem sympathetically and not make it impossible for him to make his contribution to the common welfare.

Somewhere in the organization of the Securities and Exchange Commission there should be a group, familiar with the facts relating to mine discovery and exploration and sympathetic to the contribution which the prospector and promoter have made to the development of our great mineral industry. Such a group should study the history of our mining camps, should familiarize itself with the early financing of many of our present day giant mining corporations and should devote its energies to a study of the best methods of aiding mine exploration. It should regard itself not entirely as a red light upon the highway of progress. It should be ready to change to the softer, more hopeful green when it sees ahead a road paved with honest effort and not beset by the dangers of crooked financing.

Important as is the financing of mining enterprises to the future of the nation, it is to be regretted that there has never been a member of that Commission who had any familiarity whatever with the industry. As a matter of fact, in the great personnel which has been built up around the Commission there are probably not more than five or six men who know anything about the technical or even practical problems of mining. And these are not men of authority. As a matter of fact they are relied upon to find flaws in registration statements. Their business is to turn on the red light.

D. A. CALLAHAN

Special Treatment Required

The Commission and its staff should admit the premise that the securities of mining corporations, especially those which are engaged in prospective or speculative enterprises, require entirely different treatment from those of practically any other corporation. The object of the Securities Act is to acquaint prospective investors with the facts concerning the securities which are offered for sale. It is self-evident that owing to the concealed nature of minerals it is often impossible to set forth facts with relation to the basic asset of mining corporations. This should not arouse suspicion. It is inherent in the nature of the business.

A registration statement of a mining corporation should be in simple plain language. Involved and technical statements do not enlighten the class of people who put their money in mining speculations. The average purchaser of a mining security knows nothing whatever about geology, about engineering or about the niceties of accounting. One of the things the Commission and its staff should realize is this: That securities in prospective mining enterprises are offered to an entirely different class of people than other securities.

Two Objectives Suggested

It is for this reason largely that I consider the special form for registering mining securities, Form A-O-1, entirely too comprehensive, seeking too much information, entirely too retailed and technical. If those who prepare forms for the registration of mining securities would start out using two objectives: first, to insure that promoters do not receive an inordinate share of the proceeds of the sale; and second, that the proceeds shall be devoted to exploitation of the mining property itself, they would find that they could eliminate a great mass of the other information required, simplify the preparation of the registration statement, reduce the cost to the registrant, and expedite registration immensely.

There is no question but that the Commission and its staff are serious in their efforts to prevent fraud in the sale of mining securities. I have been informed that thousands upon thousands of letters have been received by the Commission from those who complain bitterly of having been fleeced by unscrupulous mine promotions. They have had that side of the picture presented to them so strongly that we cannot criticize them for watching for crooks in every mining registration statement. It is useless to try to tell the Commission or its staff that most of the people who complain about losing their money are those who are unwilling to abide by the outcome of a speculative enterprise in which they took a long chance hoping for large returns. The fact remains, and the mining industry recognizes it, that there are unscrupulous men who in the past have found a fruitful field in the sale of worthless mining securities. They must be prevented, if possible, from carrying on their business and profiting at the expense of innocent people. As Mr. Neff

has put it, the industry itself cannot afford to have funds of this character diverted from legitimate enterprises into the hands of schemers.

Objections to Definitions

It is for the very reason that the "promoter" of mining securities has in the past had a certain opprobrium attached to his occupation, that there is serious objection to the definition of "promoter" which is contained in the instruction book. It must be understood that this definition is in the instruction book which the prospective purchaser of securities never sees. It seems to me it is not only ridiculous but an absolutely untruthful statement to include any person who is to receive 10 percent or more of any class of securities in consideration for property transferred to a corporation as a "promoter." The industry has no objection to the information being given that certain persons are to receive stock in consideration for property, but to set forth that the owner thereby is classed as a "promoter" simply befuddles the prospective purchaser.

There is objection also to the definitions of "proven" and "probable" ore contained in the instruction book, not because these are improper definitions, but because the registration statement itself does not explain what is meant by proven and probable ore. Again the prospective purchaser does not realize that when the registration statement says that there is no proven ore, it means that there is no ore which meets the requirements of the definition of "proven ore," contained in the instruction book. The prospective purchaser immediately becomes convinced that he is being asked to buy securities in a corporation which holds only barren ground. It is true that an opportunity is given to make a statement concerning ore which is other than "proven" or "probable." I doubt very much, however, that the Commission or its staff would look very favorably upon any statement with regard to what we might term "prospective ore" that would be too glowing or optimistic.

Application of Proceeds

Again there is objection to the requirement as to the application of the proceeds. By this I do not mean objection to a statement as to the purposes to which the proceeds will be applied. In this respect I personally would like to see the most definite kind of information given as to the application of the proceeds to the development of the enterprise. What is objected to is that the registrant is supposed to look ahead and classify the expenditures in a manner which no competent engineer could possibly approve. The Commission seems to have made a rule that if more than 25 percent of the proceeds to be realized from the sale of the stock is to be retained as "working capital," then a somewhat meticulous statement as to the purpose for which this money will be spent shall be set forth. I feel that when a program of development, of production or whatever it may be, is outlined and an estimate made of the cost thereof, that it should be necessary to set forth only in general terms the purposes to which the amount over and above the sum required for these purposes shall be applied.

I say this for the reason that engineers and managers know that it is not possible to anticipate the uses to which a sizable working capital may be applied. It is important to have such a fund. Many prospective mining enterprises have judiciously expended funds to explore and develop properties, have succeeded in demonstrating that the properties have value, have had to meet unforeseen expenditures which could not possibly have been anticipated, and then at the most promising period in their operations have been obliged to look for new funds to put their enterprises on a profitable production basis. In my opinion, the Commission and its staff should look very carefully into the possibilities of framing a statement which will assure a reasonable proportion of surplus or working funds but will not put the registrant in a straight jacket as to their use.

I know that the answer to this will be that the Commission will not expect funds to be spent for a specific purpose if that is not the wise thing to do and that amendments may be filed at any time and the picture contained in the registration statement brought up to date. However, this involves delay and more expense, and puts somewhat of a cloud on the enterprise. If those changes can be made afterwards, there is no reason for so much stress being placed upon segregation of the funds in the first instance.

May Expect Expansion of Powers

This whole business of registering securities sounds very simple, and the objective to be obtained is of course very desirable. Admitting all this, we must still remember that the Securities Act is a delegation by the Congress of authority to a Commission. It is a surrender on the part of the legislative body of a part of its original function. It is another departure from the principle upon which the Government was founded, of defining mutual rights and liabilities by law, and enforcing them through the courts of the land. It is just another example of "overhead" government. Recognizing it as such, we must be on guard against it at all times. All bureaucratic or overhead government agencies are manned by human beings and it is their natural tendency to seek more power. In saying this I do not mean power simply for the use of it, but power to do the things which they feel they are commissioned to do. The history of this bureau is like the history of all Federal bureaus. Its activities are growing day by day because there is no field of financing in which they do not feel that they should have a part. Consequently, in the registration of securities and in the enforcement of the law we may expect the Securities and Exchange Commission and its very active and vigilant staff to seek greater and greater power to bring about the highly desirable objects which they have in mind.

In view of this tendency it is interesting to note that upon every occasion members of the Commission and its staff insist that the Securities Act is not a "blue sky" law, and that they have no authority to pass upon the merits of the securities offered. Their duty, so it has asserted time and time again, is only to see that a full and frank disclosure be made by which an investor can form a judgment of the value of the security. They assert, however, very firmly that "it is the clear duty of the Commission to see that such a disclosure is made."

It is very clear that given the right to make rules and regulations and with this very logical objective before them, the Commission's activities will spread immeasurably. Today we are required in our registration statements, where proven ore is claimed, to set forth assays, cost of extraction, probable profit, etc. Tomorrow we may be required to go further, for after all this is a speculative and prospective enterprise. We may be required to look at the market for such metals as we propose to produce, to set forth some of the history of such markets, to indulge in speculation as to future prices, to take a glimpse perhaps at metallurgical development which may occur and

which unquestionably will affect the values of our ores. A thousand and one requirements can be readily proposed. While the Commission can not pass upon the quality of the security to be offered, it certainly can and does place obstacles in the way of registration of securities which they do not believe are meritorious. The stop order is often a death warrant.

All of this brings me to the conclusion that as far as the registration of securities of a prospective mining corporation is concerned, things are getting pretty tough and they are going to be tougher. The cost of registration is too much for that kind of enterprise. By this I do not mean the fees of registration, but the cost of having a statement prepared, the cost of engineers, of auditors, of attorneys. Of course I know that the Commission and its staff will say that all that is not necessary, but just try and get through a registration without it. The result of all this of course is that we have less and less prospecting and developing going on, as every mining district of the nation can give evidence. The ultimate effect is that practically all worthwhile ventures will find their way into the possession of larger corporations which are fully financed. If that is the object it is being accomplished most successfully.

It is my suggestion that at least one member of the Securities and Exchange Commission have a practical knowledge of the problems of mining, and that there be created in the Commission a mining division, manned by those who have a familiarity with the industry and its financial problems, such a division to treat the financing of small prospective mining corporations as an important step in the development of mining resources. It would be highly desirable if an attitude of helpfulness and cooperation would take the place of the arms-length treatment which is now accorded those who file registration statements. I would suggest that technical questions be eliminated from the registration statement. In a few words, I would urge upon the Commission and its staff that they give the prospector who has put his lifetime into the finding of a mineral property an opportunity to finance its development and exploration at little expense and without sacrificing the majority of his holdings. Having done this it is a safe presumption that they will offer the helping advice and counsel and discard the modern device which is a greater obstruction to prospective mining enterprises than a granite intrusion—the stop order.

By **BLISS MOORE**
Northwest Mining Association

I HAD only a few remarks on this subject and many of those have been dwelt upon. However, I would like to read some of the recommendations of the Northwest Mining Association with respect to the Federal Securities Act of 1933.

The Federal Securities Act of 1933 is now more than four years old. While the objectives of this legislation are laudable and unquestionably in the public interest, the manner of administration and the rules, regulations and intrepretations promulgated thereunder have been so confusing, contradictory, and at times unreasonable, as to impede financing of mineral development.

The Northwest Mining Association therefore makes the following recommendations:

1. *To the Congress of the United States:*

Section 3 of the Act exempts certain securities, among them any security which is part of an issue sold only to persons resident within a single state (Paragraph 11), and Section 4 of the Act exempts transactions by an issuer not involving any public offering. These two exemptions have been used to nullify each other, in that the issuance in a private transaction of a share or shares of stock to a single individual not a resident of the state is held by the Commission to necessitate registration with the Commission of an intra-state offering. Thus, the issuance of stock to a close relative of one of the organizers, or the issuance of stock for property one of whose owners resides outside the state, is held to render the exemption under Section 3, Paragraph 11, ineffective. It is believed that the purpose of the Congress was to control only the interstate public offering of securities, and that the nullification by the Commission of the two exemptions noted is not within the intent of Congress, and is placing an undue burden on the legitimate financing of purely local enterprises. It is recommended that the law be clarified so as to prevent interference with intra-state transactions.

2. *To the Securities and Exchange Commission:*

The permissive exemptions under Rule 200 and Rule 202 have been made ineffective in many cases by rulings that actually prohibit the raising of a few thousand dollars without an expense almost equal to the amount to be raised; and more recently, by an opinion of the General Counsel, to the effect that an assessable company cannot take advantage of the exemptions in Rule 200. It is recommended that the Commission revise its rulings so that $30,000 of initial capital may

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be raised without full registration, but merely by filing a simple form of short prospectus with the Commission at Washington. It is agreed that the information should make known the financing costs, the portion of the funds which are to be applied to actual development, but should not require a small company to furnish detailed information that may properly be required of a corporation raising a larger amount of capital.

It is also recommended that Form A-O-1 for mining companies less than two years old be revised so as not to require, in Items 32 and 33, the detailed description of experiments or explorations which have brought merely negative results, and are there-

fore of no material interest, either to the directors of the company or its present and prospective stockholders. It is also recommended that Item 2 of Form A-O-1 be revised so as to define more specifically the meaning of the phrase "any person controlling the registrant," since the term "control" is susceptible of various interpretations, and should be confined to actual control of the registrant by means of stock ownership direct or indirect in a specifically defined amount.

3. *To the American Mining Congress, and to the Various Regional, State, and Local Associations of Mine Operators:*

It is recommended that a central fund be established through which assistance may be given to mining companies and mine operators who may be harassed by capricious, arbitrary or unreasonable acts of the Securities and Exchange Commission and its agents, or by demands prior to registration for information that cannot reasonably and inexpensively be provided.

Adopted at a regular meeting of the Northwest Mining Association in the city of Spokane, Wash., on August 30, 1937, to be presented to the proper committee of the American Mining Congress at its Western Division meeting at Salt Lake City, on September 7 to 10, 1937.

Gentlemen, I do not think that mining men have any quarrel with the intent and purposes of the S. E. C., but they do complain about the administration of the Act, the delays and many unnecessary details that are required of a registrant.

Many people here in the West think the S. E. C. was formed to control mining companies only. This, of course, is not true. I checked over a few Government lists of companies applying for registration and found about 10 percent were mining companies but less than 6 percent of the money involved is mining.

Small companies put men to work. Every time one man is put to work five others are given work, so if you put 10 men to work on a mine in reality you are giving 60 men employment.

Those are some of the ideas that have occurred to me.

By **ROBERT S. PALMER**
Secretary
Colorado Mining Association
and Colorado Chapter,
American Mining Congress

WE were very happy to hear Mr. Neff, representing the Securities and Exchange Commission, point out that after all we still have 48 sovereign States. Those of us who have watched the activities of the Commission with some degree of diligence have been inclined to feel otherwise at times. All of us, I am sure, were pleased with the statement made to this convention by Mr. Neff, and a great many of us have enjoyed working with members of the Commission and their agents, hopeful that eventually a solution to a most complex problem will be forthcoming. During the short time allotted to me may I express the viewpoint of a Coloradoan, and especially a Westerner. I sincerely trust that remarks made here will be concurred in by other western representatives; and may I point out that in substance we agree with, and concur in, the remarks made by Mr. Fernald of the American Mining Congress, and whole-heartedly approve the declaration of policy as announced by the American Mining Congress at its meeting last January in New York City.

The mining industry is confronted with so many perplexing problems today that we are prone to overlook the question of new financing, and the problem of raising adequate capital for the development of new mines. In Colorado we have a vast diversified mineral area, which in many sections is sadly in need of development and the expenditure of new capital. Many owners of these properties desire funds for the development of mining operations which will either prove or disprove the alleged value of their properties. These individuals, for the most part, are not as fortunate nor as wealthy as many of the delegates to this convention, and they must of necessity look to the general public for financial assistance if their properties are to be developed. Most of these individuals are not familiar with the rules and regulations of the Securities and and Exchange Commission, nor are they able to analyze the various requirements of the new form for mining enterprises known as A-O-1 without expending for expert help more of their funds than they can afford.

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Experience has shown in our State that a vast majority of the more reputable mining men, after going through these forms and studying the various and sundry implications thereof, are inclined to throw up their hands in disgust, and either allow their mining properties to lie in idleness or are forced to sell out to the larger companies. One of the officials of the Securities and Exchange Commission ventured the statement recently in Denver that there was no need for public financing of mining properties as long as larger companies were willing to purchase mines. The absurdity of this statement is self-evident; and from the standpoint of the people of our State it may be said here that we welcome development of mining resources by the larger companies, but we are far more vitally interested in the ultimate success of the little fellows who may develop into big fellows and distribute dividends to the public at large which has invested new capital in the enterprise.

These mining men who are confused by the complexity of the requirements and regulations of the Securities and Exchange Commission are not alone in their confusion, for the same kind of confusion seems to exist among accountants, engineers, and even lawyers. For illustration—one of our outstanding firms of accountants in Denver questioned a certain procedure in the filing of a registration statement. They were forced to consult with the experts of their Chicago office. The Chicago expert recom-

mended a certain procedure, which he felt was entirely in accord with the requirements of the Commission. This procedure was not approved by the S. E. C. officials. Changes were necessary, resulting in delays. Engineers have expressed fear lest their reports appear in a hearing conducted by some agency of the Commission in some far-away place. The same thought has been expressed by members of the bar, both privately and in public, and some have gone so far as to conclude that as long as these harsh requirements and complex forms exist "all will be quiet on the Western promotional front."

Many instances can be cited illustrating the hardships which have been forced on honest individuals by overzealous employes of the Commission. It is not our purpose here, however, to concern ourselves with minute details, for the broader principles of the problem are all we can hope to consider in such a short time. We ask ourselves "Is the act as administered assisting legitimate financing of western mining properties?" Our answer is, no; at least, up until this time. We don't question the improvements which have been made. We know those working with the Commission are sincere in their desire to help honest financial programs. We have no fault to find generally with the personnel or with the Administrator of our Denver office, as we have seen every evidence of efficiency both in Washington and in Denver in the higher brackets. We do, however, find that subordinates have made and are making many mistakes which are proving costly to the western section of our country. We prefer to assume that a solution is forthcoming. Understanding must prevail on the part of officials lest public sentiment force changes which will upset much of the good work accomplished by the Commission.

Simply an expression of our sentiment, and not for strict interpretation, we venture the following suggestions to officials of the Commission: The issuance of fewer "stop orders," and more "go orders." Less delving into private matters and a tendency to snoop, and more western understanding and confidence. Fewer forms, and greater simplification, thus assisting the investor as well as the registrant. And again we suggest the absolute elimination of the Commission's attempt to fix a value on an undeveloped mining claim, or pass judgment upon its true worth. Recent sensational strikes in the Mojave in California and in the great Jumbo in Nevada have shown conclusively that even our most eminent engineers have overlooked some of our most valuable mining properties for years.

May I, in conclusion, express our sincere thanks in Colorado for the splendid work done in our State by Mr. Baldwin B. Bane, executive of the registration division of the Securities and Exchange Commission, and also Mr. Foster Cline, Administrator of the Denver office.

By CARL J. TRAUERMAN
President
Mining Association of Montana

CARL J. TRAUERMAN

LAST year at Denver I discussed at some length the able address of Chairman Landis of the S. E. C., in which I dwelt mainly on the effect of the Securities Act of 1933 on financing primary mining ventures. What I mean by financing is selling the stock after you have registered it.

I have little to add to my views and opinions of last year. However, I will repeat some of my statements.

I consider the act a very good one, but it is going to take us several years to get used to it and there will perhaps have to be some modifications from Congress at some future time, before we can publicly, legitimately finance a primary venture. The law evidently was not drafted to take care of such financing. However, Congress drafted the law and the S. E. C. is doing the best it can to administer it.

One great trouble now is that the legitimate distributors are afraid of the law as there is too much responsibility attached to it to undertake the distribution of a speculative security like a primary mining issue. If Congress could lessen the responsibility of the distributor, or as the act wrongly calls him "the underwriter," without opening the door to the crooked gentry, it would be a big help to the mining industry.

I enjoyed the privilege last winter of conferring for two days with Messrs. Harold Neff and William F. Boericke when they drafted the new mining form A-O-1 and I have only one serious objection to the rulings for that form. The objection is that on the cover page, or first page of the prospectus there must be a statement covering items 18 and 25, which state just how much commission is being allowed for the sale of the stock. While the prospectus is mainly a compendium of information, it still is a selling medium and its compiling should be left to the ingenuity of the issuer, as long as he tells the truth and includes all the facts required by the Act. It is a well known fact that commissions for selling speculative securities are much higher than for selling bonds and stocks of established companies. The public, seeing the large commission on page 1 of the prospectus, probably will throw the prospectus in the waste basket and read no further. In short, before a miner has the chance to sell his wares he must tell what the commission is. A mine, where a 25 percent commission is allowed, may be ultimately a more profitable venture than an industrial issue where only 2 percent commission is paid. The psychology of having the large commission on the front page of a prospectus is thoroughly bad.

While I and many others are at this time greatly discouraged over the outlook of financing primary mining ventures, I have in mind a rather far-fetched, long-range Utopian view that perhaps this may ultimately be accomplished with the help of the Social Security Act.

If that Act works out as now planned, the Social Security fund will take all the Government bonds that are issued and all that are, at present, outstanding. The insurance companies and banks will then have to invest their funds in industrial bonds, preferred and common stocks and these stocks should be good risks, as the S. E. C. will see to it that they are. I might add that the public, right now,

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MINE TAXATION

- ***Statement Presented January 22, 1938, to the Committee on Ways and Means at Hearings on the Proposed Revision of the Revenue Laws***

By JULIAN D. CONOVER
Secretary
The American Mining Congress

THE American Mining Congress expresses its appreciation of the spirit of this report, which evidences a sincere desire for such a system of Internal Revenue taxation as shall not discourage or obstruct business progress and development, on which the Government depends for its revenues, labor depends for employment and the people as a whole depend for their prosperity and general welfare. We believe we speak in the same spirit which your Subcommittee has had when we urge the community of interest of Government and taxpayers, employers and employes, investors and the public at large. The prosperity of business is a matter of common concern.

Believing it was the spirit of the Subcommittee, and will be the spirit of your Committee and of Congress, to do what can be done by a Revenue Act to encourage and stimulate business, employment and recovery and consequent creation of revenue sources to the Government, we present the following comments with respect to certain features of the proposals in this report:

1. Proposed New Plan of Corporate Taxation

With due appreciation that the proposed plan will avoid much of the bad economic effect of the present law, we regret that it has seemed necessary to propose such an involved and complicated plan as the Subcommittee's report presents. We trust that some of its obscurities and difficulties may be clarified and simplified in drafting the Revenue Bill.

A taxing statute of broad general application to business should be such that the ordinary business man can understand it and recognize its application to his business affairs. Otherwise he cannot intelligently make those prompt business decisions upon which progress depends.

If the general plan as proposed is adopted, we believe the provisions should be simplified, even if, by doing so, there should seem to be some loss of revenue.

2. The Undistributed Profits Tax

We regret that the Subcommittee has recommended a continuance of the undistributed profits tax in any form. The 4 percent rate is undoubtedly far less harmful than a 27 percent rate, but even a 4 percent rate is a hardship when it is imposed upon a corporation not in a position to distribute funds which are tied up or needed for the prudent conduct of its business.

We advocate the abolition of the undistributed profits tax. We believe that repeal should be retroactive to January 1, 1937. We believe the stimulus to business from such an action would be well worth the relatively small loss of revenues which the Government might suffer thereby. We believe that any such loss of revenues will be more than offset by a saving to the Government of relief expenditures otherwise to be made. It is a desirable and economical way to stimulate business recovery and reemployment, which in turn will benefit future revenues.

3. Relief For Additional Assessments

We further urge a relief provision to allow a reasonable additional period, possibly 90 days, after assessment of a deficiency in undistributed profits tax for either 1936 or 1937, within which distribution of dividends may be made before computation of such deficiency tax. The effect of this would be that if the Commissioner proposes to assess an additional undistributed profits tax in connection with his audit of tax returns for 1936 or 1937, the taxpayer may not be without remedy with respect thereto, but may then have opportunity to make, within a reasonable time, a distribution to stockholders which will be taken into account as a credit for dividends paid with respect to such tax.

4. The Development of Mining Properties

The undistributed profits tax has particularly obstructed the development of new mining enterprises and has hindered the restoration of properties which have been shut down or been curtailed during the depression.

Mining enterprises begin with prospecting, carried on by an individual or a small group. Perhaps years are spent in reaching a point where actual expenditure of considerable sums of capital are warranted by the developments which have taken place. When this point is reached, two courses are open: either the owners of the property, who have spent years of labor in bringing it to this stage, must, in order to secure new capital, surrender a large equity in that which they have created themselves, or they must pour back into the enterprise earnings which are derived from operation.

This brings about a situation where the operation of the undistributed profits tax works a serious hardship. Frequently the corporation has agreed to pay for the property a sum of money over an extended period. If the undistributed profits tax is continued in its present form or even in the form suggested in the report of the Subcommittee, a hardship will be worked upon those who have devoted their lives and efforts to the operation thus far. They are obliged to distribute the earnings which have accrued or pay a heavy tax upon any sum which they devote to payment for the property. Then again, when the productive stage is reached, concentrating plants must be built. Considerable additional money must be used for the purpose of development of ore bodies which have been discovered. All of this in the ordinary course of things should be paid out of current earnings. It will be readily seen that the operation of an undistributed profits tax will work a decided hardship upon these men who have contributed so much to bringing into productive operation enterprises which will add to the wealth of the nation.

Under the proposed plan, a 20 percent tax will be placed upon the proceeds of such enterprises which are

devoted to payment for the property itself, to purchase of new equipment or to the erection of the necessary plants for operation. The present system of income tax computation which requires capitalization or deferred deduction of many of these expenditures —which ordinarily and necessarily absorb all or a substantial part of the current proceeds of mine production —results in a showing of taxable income even though the funds have been absorbed in these necessary expenditures for development and equipment of the property.

This is not a matter for argument as to income tax theory, but a practical situation which confronts the mining investor. Manifestly, there are some prospects which would not be developed against the 32 percent tax and which would be developed against the 20 percent tax; but there are many, the development of which will be obstructed by a 20 percent tax rate.

There is no question of tax avoidance, because long before there were any income taxes it was recognized that the only sound policy for a mining company was that the cost of development and upbuilding of the property should so far as possible be met out of current income. Investors in mining enterprises expected to wait for income return to them until free income became available. They considered such free income as not available to them until the proceeds of operations exceeded the current expenditure requirement, with no such distinction as to capitalization and deferment as the Bureau now lays down.

The provision for tax upon closely held corporations applies also to many mining properties which have been developed in the manner we have endeavored to describe. It seems to us a cruel procedure to require a group of men, who have labored and toiled over a period of years and have uncovered wealth through their efforts, to capitalize their corporation in such a manner that the profits of those efforts shall go to those who have merely contributed capital after the value of the property has been demonstrated. We contend that the pioneers should be encouraged to seek the reward of their own efforts, and should not by a system of taxation be required to dilute their holdings.

We urge that some provision be made which will allow mining properties to deduct from income, to the amount of such income, those expenditures which are currently made for development, equipment and upbuilding of the mine.

5. Closely Held Corporations

This is a new provision which, in the short time the report has been available, we have not been able fully to understand. It seems to be a virtual continuation of the present undistributed profits tax, at increased rates, applicable to "closely held corporations" engaged actively in productive enterprise.

The country has suffered from the effects of the undistributed profits tax broadly applied. All these effects seem inherent in it even though applied to a limited group. The limited application may not have such an extreme effect on general business; yet it seems unwise, even in limited application, to perpetuate the evil effects of such a tax.

Many of our most desirable local enterprises have been built up and are still owned by families or small local groups. Employes who are unemployed because such corporations are unable to develop or are forced to curtail will feel it no less than they would if the stock of the corporation were more broadly owned. Curtailment of expenditures for inventories or for machinery and equipment will be no less felt because such corporations have only a few stockholders.

We believe the report is in error in its conclusion that the provisions of Sec. 102 are productive of little revenue. These provisions are generally recognized and respected. We believe the relative absence of instances where it could be successfully maintained that there was improper accumulation of earnings is evidence that the provisions have been generally effective.

We urge that the provisions of Sec. 102 and Title 1A are adequate, and that the additional proposal for Title 1B, with all its complications and its detrimental effects upon a desirable type of local business enterprise, should not be enacted.

6. Deduction of Net Losses

The present proposals would allow prior losses to be deducted, in effect, only to the extent of 4 percent of the tax. We submit that such losses should be permitted as a deduction from or in computing net income subject to any tax. All the reason for allowing such loses to be deducted in computing a 4 percent tax apply with equal force to a deduction in computing a 16 percent tax.

A mine continues to operate during a loss period solely in the hope of subsequent profits. Such losses are just as much a charge against subsequent profits as are any costs or charges of the current year, and should be allowed as such for income taxation.

7. Capital Stock Tax

The proposals of the Subcommittee recognize the fairness of allowance of periodical redeclaration of capital stock taxes, proposing to allow such redeclarations every three years. We believe that redeclaration should be permitted every two years and that the first redeclaration should be made in returns to be filed in 1938. The adjustments are complicated and are on various bases, some on bases which bear no possible relation to the basis of the original declaration. Over a period when frequent redeclarations were permitted the tax yielded substantial revenues with a minimum of administrative difficulty or legal contests. We believe it will continue its substantial revenue yield if redeclaration is permitted every two years.

8. Inventories

The present rigid rules of the Bureau applicable to cases where specific items of inventory are not clearly identifiable work definite hardship upon smelters, refineries and fabricating plants.

These industries conduct their business with a view to protecting their processing profits from the risks of market fluctuations. This result is accomplished primarily by matching current purchases and sales. They plan, so far as possible, to eliminate buying and selling as a material income-producing factor.

A proper reflection of the income of these industries is obtainable by application of current costs to current operations as is done in the accounting practice generally known as the "last-in first-out" or "replacement" method of determining inventories. This is generally recognized as an accepted accounting practice in such industries.

We urge an appropriate amendment to section 22(c) of the law to permit taxpayers in these industries to use this method of accounting.

We respectfully urge that your Committee in its action on these matters and in the drafting of a revenue bill, give consideration to the points which we have here presented.

WHEELS of Government

• *As Viewed by A. W. Dickinson of the American Mining Congress*

WHILE it is difficult to fix upon or to find any tangible accomplishment in the Washington picture in recent weeks, the situation differs in one respect from that of a year ago—there is no talk of presidential or vice presidential fishing trips in the Southland.

The presidential conferences attended by leading industrialists and labor representatives, and later by representatives of the so-called "little business men" are somewhat indicative of a modified trend in administration thinking. It is an interesting fact that the second of these conferences, in which industrialists and labor representatives participated, was arranged by President George Harrison of the Railway Clerks Union. The recent declaration on the part of labor against the undistributed corporate earnings tax and the quick agreement just signed by management and labor in the steel industry, are further signs of the widening realization that uneconomic and untimely procedures must be tempered in the interest of the national welfare.

The meeting of the "little business men," authorized by the administration and organized through the agency of the Department of Commerce, resulted in actions and pronouncements which clearly show that the situation surged out of the control of the administration's managers. From the original intention to invite about 200 representative small business men, the request for invitations increased until the meeting in the Department of Commerce auditorium was attended by over 1,000. Among the 12 committees which deliberated on resolutions to be presented to the President, was one made up of a volunteer group of small business men, not planned or arranged for by the Department of Commerce, who expressed their intention to develop resolutions dealing with Federal taxation, and did so accordingly. The 12 group chairmen brought their resolutions to the officials of the Department of Commerce where they were prepared for presentation to the President. This consisted largely of tempering and shortening, as illustrated by the following: One resolution which read that "unwarranted and malicious attacks on business by administration representatives should be permanently stopped" was so altered that in the form finally presented it read: "that the Government continue to cooperate with business."

Even in their toned-down form, the resolutions gave voice to very much the same desires and warnings which have been expressed by industrial leaders and by representative associations for several years. Typical of the expressions were the following recommendations:

1. Repeal the undistributed corporate earnings tax.

2. Modify the capital gains tax to give the taxpayer credit for loss years against years of gain.

3. Modify Securities Exchange Commission's regulations to increase the amount of exemption to $500,000, but require reasonable information for protection of investors.

4. That employer and employe alike be held responsible for faithful observance of mutual labor agreements.

5. That governmental expenditures be curtailed and the budget balanced as soon as possible.

6. Questioning the merit of a standard wage and hour bill because of geographic differentials (originally expressed as a flat opposition to any wage-hour legislation).

7. That an immediate investigation of the administration of the National Labor Relations Board be made (originally framed to urge repeal of the Wagner Act).

8. Urging the encouragement of the investment of private capital in new enterprises.

From the expressions of this group it is plain that the men responsible for the carrying on of enterprise and the meeting of the payrolls of this country, whether the business they conduct be little or big, are agreed in their position on Federal taxation, wage and hour bills, the National Labor Relations Act and its administration, and in general on any attempts at Federal regulation of manufacturing and productive enterprise.

With special demands for national defense, additional requests for relief funds and with unemployment still serious, it is quite apparent that policies of economy in Federal affairs are again out of the picture for the coming year. Administration suggestions for decreasing expenditures in CCC camp and public roads appropriations have met with a cool reception from the members of Congress. Congressmen and Senators, individually and in groups, have had White House conferences in which they have urged upon the President their needs for these expenditures in their Districts and States.

In the Senate the anti-lynching filibuster still continues in this, the third session of the 75th Congress, in which it has consumed so much time. While this controversy may soon be temporarily suspended, it has brought to many Senators a deep-seated feeling of resentment. An attempt to invoke the cloture rule which would limit debate and force a vote was defeated

51 to 37, a tally much below the necessary two-thirds required.

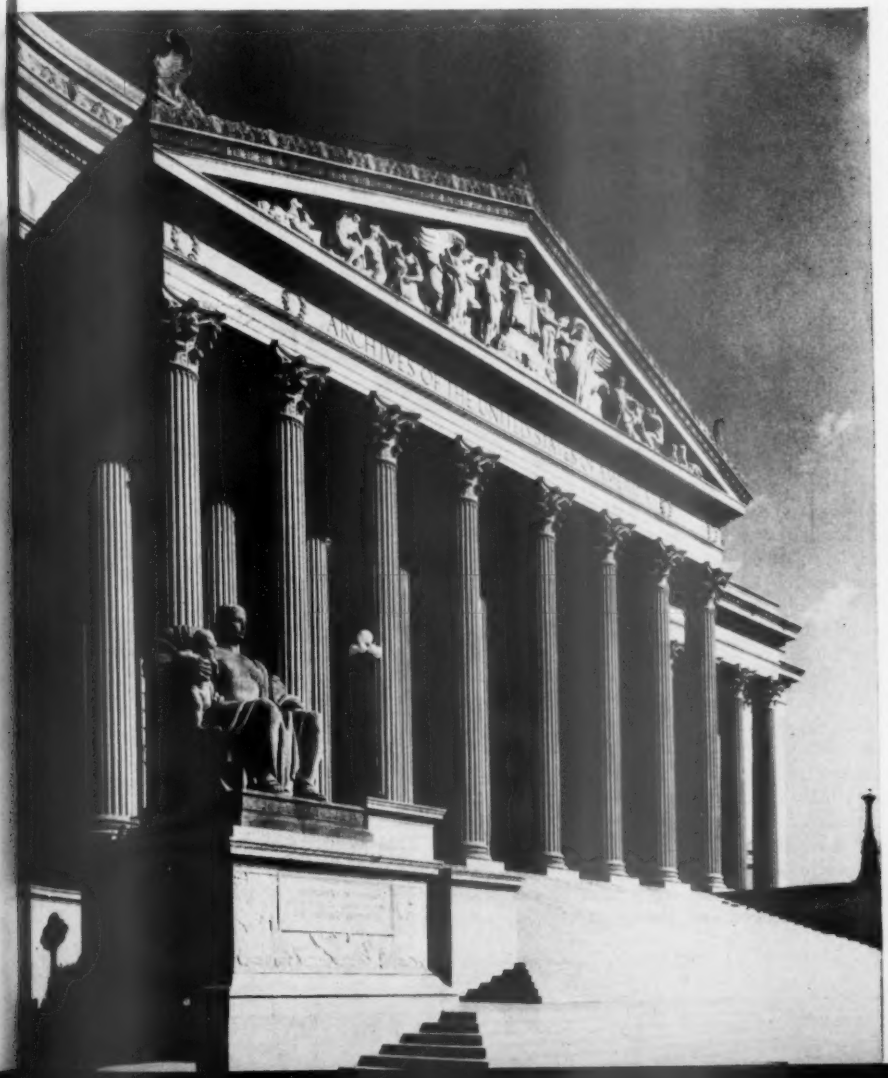
The filibuster has retarded Senate consideration of three departmental appropriation bills—Independent Offices, Treasury-Post Office, and Navy—which have passed the House and have been reported by the Senate Committee on Appropriations. It is of interest to note that in the supply bill for the Navy Department there is included $3,000,000 for the purchase of "strategic" materials such as tin, tungsten, quicksilver, antimony, etc. This insertion has been made at the request of Representative Scrugham of Nevada, and brings the total amount available for such purchases to approximately $6,000,000.

Taxation

Since the hearings before the Committee on Ways and Means on the Revenue Bill of 1938 closed on January 25, the Committee has been in almost constant executive session in endeavors to agree upon the details of the measure. On January 22, a statement on the part of the American Mining Congress on the proposed tax changes was presented to the Committee by Julian D. Conover, Secretary, advocating the complete abolition of the undistributed profits tax. It also voiced objection from the standpoint of mining enterprises to the new "closely-held corporations" tax, known as Section IB, which was proposed by Chairman Vinson's Subcommittee. The statement advocated the carrying forward of net losses; biennial declarations of value for capital stock tax purposes; the proper treatment of inventories through recognition of the "last-in first-out" principle, and a relief provision to allow credit for additional dividend distributions following deficiency assessments.

There is a divided situation in the Ways and Means Committee over the inclusion of the Section IB covering "closely-held corporations." It is reported that seven Democrats on the Committee are in definite opposition and with seven Republicans against the measure, the vote stands 14 to 11 for elimination. The present situation is such that it is considered unlikely that the Revenue Bill of 1938 will be reported for House consideration before the end of February. Chairman Pat Harrison of the Senate Committee on Finance, has announced that his committee will conduct hearings as soon as there is a reported bill to consider.

Main entry to Archives Building, Washington, D. C.



Wage-Hour

It now appears that wage-hour legislative activity will be deferred until well on toward the end of the present session of Congress. While the President has declared that there should be a "floor" for wages and a "ceiling" for hours, it is widely recognized that because of geographic differences and varying industrial needs, the imposition of federal wage-hour control is impractical. It is further true that men in labor circles who look into the future have become more and more cool toward a federal control which they realize would eventually operate as a shackle upon their activities. It is reported that in view of the Fall elections, there are many members of the Congress who would like to register a vote that would be helpful in their representations to labor constituencies during the campaign period. Many observers think that this may be accomplished either through the medium of a very mild type of bill, or else by the passage of a measure which would remain in conference committee or fail of final approval in one of the Houses.

Hearings have been conducted this month on the resolution of Senator Burke of Nebraska calling for an investigation of the National Labor Relations Board. Senator Burke made a two days' presentation before a Senate Judiciary Subcommittee condemning the conduct of the Board in the administration of the Act. Chairman Madden followed with a general denial and an effort was made by certain members of the Subcommittee to turn the investigation over to the Senate Committee on Education and Labor. A week later the Subcommittee voted against reporting the Burke resolution but the Senator has stated that he will continue to press his own investigation of the Board's activities. There is much sentiment for the amendment of the National Labor Relations Act along the lines proposed by Senator Vandenberg of Michigan

last summer, but it is thought quite unlikely that such amendments can be made in the present session.

In the meantime, out in Illinois in the latter part of January, Federal Judge F. M. Wham rendered a decision ordering 66 members of the Progressive Mine Workers of America, an AFL affiliate, and seven of their local unions to pay the United Electric Coal Companies $117,000 for damages done to their coal mine property. A civil decision followed a criminal action in which members of the union were given prison terms and fines. The Court said, in part:

"Labor Unions, officers . . . who during the progress of a strike, enter into a conspiracy to inflict violent injury upon the property or business of such employer or by unlawful means do obstruct its business or prevent it from conducting its business . . . are each liable to respond in damages for such loss or injury so inflicted."

This decision, as well as the experiences in the Hamilton-Lester, Coronado and Danbury Hatters cases in the past, show that members of unions, individually and collectively, may be held liable under existing law.

Anti-Trust

The Madison, Wisconsin, convictions in the oil cases coupled with pending action of a similar nature in cement, steel and other industries have stimulated thought in the past month on the subject of business cooperation and forms of regulation. In the Wisconsin trial it is reported that men were convicted for business procedures which they were encouraged and requested to perform by agents of the federal government. Here again, we have the problems of the twilight zone wherein able men must grope about with no certainty of charting a course of commercial procedure which will be free from criminal conviction and the assessment of triple damages.

Very recently Donald Richberg, in addressing a group in Washington, drew upon his long and wide experience in the field of trade practices in giving expression to a means which he believes may lead to a solution. Taking the viewpoint that one besetting sin of reform is the attempt to build Rome in a day, he called attention to the work of agricultural leaders in building a cooperative mechanism in which the Bureau of Agricultural Economics has played an important part. Following the same idea for all other business enterprise, he advanced the thought of establishing a permanent Bureau of Industrial Economics in the Department of Commerce, under an administrator supplemented by a policy-making Economic Council. For the considereration of specific trade agreements or association plans, Mr. Richberg suggested a special Advisory Committee representative of management, labor, and other group interests directly concerned. This plan would require written approval of cooperative programs to include findings of fact and conclusions, and would provide for continued public supervision so as to make sure that the public interest is protected. Public supervision, however, in Mr. Richberg's view, must not be extended into governmental control, and neither can the regular prohibitions of monopolistic or unfair practices be relaxed.

In the above plan there still remain the handicaps inherent in bureaucratic and political organizations. Nonetheless the present situation as reflected in the anti-trust convictions in the oil industry is far from a happy one; the NRA form of procedure was shown to be impractical, and an adequate solution of these difficulties is much to be desired.

Foreign Trade Agreements

On January 24 the State Department made public a supplemental list of articles subject to negotiation for reductions in duties under the proposed United Kingdom Foreign Trade Agreement. The closing date set for filing briefs is February 26, and the hearings before the Committee for Reciprocity Information begin March 14. Articles of interest to mining contained in this list are salt, fluorspar, hollow drill steel, lead-bearing ores, flue dust, and mattes of all kinds. Closely following on January 28 came an announcement and list covering the proposed Canadian Agreement, with March 12 as the closing date for briefs and April 4 for the opening of public hearings. It was stated that the inclusion of any product in the published list does not necessarily mean that a reduction in duty will be made, but that the publication is for the purpose of enabling interested persons to learn whether the articles in which they are interested may be considered for tariff concessions. In the wide list of articles carried in the Canadian list are found cobalt oxide, black pigments, salt, fire brick, limestone, lime, cement, bentonite, feldspar, mica, talc, ground nepheline syenite, building stone, spiegeleisen, ferromanganese, ferrosilicon, ferrochrome, boron carbide, ferrotitanium, ferrovanadium, ferrouranium, iron-manganese alloys, hollow drill steel, woven wire cloth and screen of any metal, aluminum, cadmium, nickel, lead-bearing ores, flue dust, mattes of all kinds, lead metal, zinc-bearing ores and zinc metal. Subject to fixation on the free list are the following: Sulphuric acid; asbestos; calcium cyanamid; coal-tar products; cobalt and cobalt ore; sodium cyanide; crude artificial abrasives; lignite; uranium ore; natural gas; gravel; nepheline syenite; nickel ore, matte and oxide; plaster rock; and radium, celenium, and uranium oxide and salts.

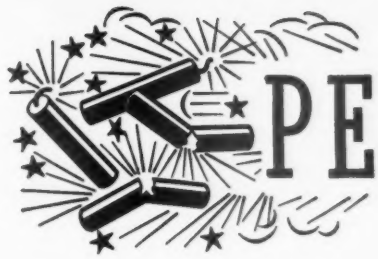
Immediately upon publication of these lists interested persons were informed, briefs are being prepared and oral presentations will be made before the Committee on Reciprocity Information by the producers of the articles subject to negotiation.

Michigan Geological Map

The centennial geological map of Michigan was issued late in 1937 as a part of the celebration of the Centenary of the Michigan Geological Survey, now the Geological Survey Division of the Department of Conservation of Michigan, and also as a record of the knowledge of the geology of the State obtained by the Survey during the past 100 years. Scale is 1 inch to about 8 miles.

The pre-Cambrian west of the meridian of Marquette was made from manuscript used for the map of the Lake Superior region in Professional Paper 184 of the United States Geological Survey, but the eastern boundary of the pre-Cambrian was changed to accord with later information obtained by this Survey.

The Paleozoic geology was compiled from records on file in the Survey and in Geology Departments of the University of Michigan and Michigan State College, from well contractors, and from mining, oil and gas, and other mineral and industrial operators. In addition, the records of over 5,500 wells—water wells, test wells, core holes, and oil and gas wells—were studied, cross sections made, and contacts drawn from dips so obtained. Much information obtained from well samples is given in the legend.



PERMISSIBLES

Nobody doubts that the President knows what he is talking about when he says that it will be some time yet before the budget is balanced. . . .

■

The way we have been accusing the Japanese of high-handed acts lately, we can look forward some day to actually charging them with waging official war in China. . . .

■

One of our correspondents in the State of Washington sends the following: The Federal licensing bill is a New Deal measure, yet it is said Senator Schwellenbach is opposed to it. If this is true it is news in the same category as the man who bit the dog.

■

The trouble with this domestic economy of ours is that prices drop when you have no money to take advantage of them. . . .

■

Maybe one of the chief causes of wars is the density of brains rather than the density of population. . . .

■

The way this Congress is hitting the ball, its batting average is going to tie that of a big league pitcher's at the end of the season. . . .

■

People who call on the President these days have trouble telling him something he hasn't already heard. . . .

■

You can call it economy if you want to, but when a single appropriation bill which does not provide a penny of relief funds calls for nearly $1½ billions, the dictionary meaning of economy is being sadly abused. . . .

■

When you stop to realize that the new Federal budget comprises 98 pages of figures, all in the billions, you can see how easily the President can embarrass critics by asking them if they have read the budget yet. . . .

At a Senate Committee hearing recently, it was brought out that two expensive automobiles, one a sedan and the other a limousine, costing $7,940 were purchased for the Secretary of the Interior out of public works funds. . . . The witness, in explaining reason for purchase of the cars, said that an emergency existed. . . . "What was the emergency?" a Senator demanded. . . . "The secretary wanted a car," answered the witness. . . .

■

When Senators are absent from the chamber, the majority whip, who happens to be the sartorially splendid J. Ham Lewis of Illinois, rises each day to explain absences. . . . The other day the seat occupied by Senator Smathers of New Jersey, who was away on his honeymoon, was vacant. . . . Explained Senator Lewis: "The senior Senator from New Jersey is detained by domestic urgencies."

■

The Senate is like the man who is full of good resolutions on New Year's Day and forgets all about them the next. . . . After it confirmed Justice Black, it made all kinds of promises that the next nominee would undergo a searching investigation. . . . Then it turned around and confirmed Justice Reed in five minutes without debate or argument. . . .

■

There is a definite trend away from the observance of treaties, says the President. . . . Which ought to entitle Mr. Roosevelt to first prize as a master of understatement. . . .

■

Wallace made a good secretary of agriculture, as far as he was able. . . . But for the new farm bill with its complicated formulae of crop quotas they're going to need Einstein. . . .

■

The tax collectors of this country are a fine, earnest group of public servants, asserts a Treasury official. . . . No question about their earnestness. . . .

The country is going to have new Jefferson nickels to replace the buffalo coin. . . . The new ones will be just as hard to hang onto as the old ones. . . .

■

Our latest crop of gray hairs comes from the realization that the per capita income last year of $469 was just $39 more than the per capita public debt. . . . And how is one going to live on $39 a year? . . .

■

An astronomer predicts that the star Gamma Cassiopeia will explode at an early date and destroy the entire solar system. . . . That's as good a solution for our troubles as any. . . .

■

Some northern cities are asking the Federal Government to clean the snow off their streets. And if it rains next spring why shouldn't the Federal Government hold umbrellas over us? . . .

■

Do you remember how when the smaller currency was put into use everybody protested that it would slip through the fingers. . . . And hasn't it? . . .

■

Government farm experts are working to produce the perfect potato. . . . Just think what that means to the farmers. . . . Naturally, they will be paid more for not growing that kind than the ordinary spud with all its faults and blemishes. . . .

■

Just as long as he has such an expensive Government on his hands, the taxpayer will never be able to get on his feet. . . .

■

A recent picture of the House of Representatives in session discloses a number of bald-headed rows. . . . Which is as it should be when one remembers that a bit of burlesque is enacted now and then in that chamber. . . .

NEWS and VIEWS

Appalachian Coals Approval

Approval as a marketing agency of the Appalachian Coals, Inc., has been extended indefinitely by the National Bituminous Coal Commission, according to a formal order issued by the Commission on January 28.

This agency is an example of the opportunity afforded coal men to organize and regulate their own business. Having functioned as a sales agency almost continuously since April 17, 1933, Appalachian Coals has earned a fine reputation as a service organization. Its fuel engineers provide technological information on coals and coal-burning equipment for its customers and constituent companies; its marketing division likewise gives service to fuel buyers and sellers, keeping them informed on market conditions; and its advertising department renders consulting service to coal producers, distributors, and retailers. Accounting, statistical, and traffic service are given by other departments.

—■—

Coeur d'Alene Developments

Mines of the Coeur d'Alenes have suffered from the low metal prices. Hecla has cut its quarterly dividend rate from 25 to 10 cents a share, Bunker Hill has passed its first quarterly dividend of the year, and Sullivan Mining Co. has suspended operation of its new 300-ton Star mill, which has been running only about six months. Two hundred fifty men in the Star mine and mill have been laid off indefinitely, with about 70 men retained for development work. The Sullivan Co. is owned jointly by the Bunker Hill and Hecla companies. The Bunker Hill continues to operate its own mines, mills, and smelter; the Sullivan Co. its electrolytic - zinc plant; and the Hecla Co. its own mine and mill and the Polaris mine and mill. A serious shaft accident on the 1,850-ft. level in the Morning mine, owned by Federal Mining & Smelting Co., forced it to close down for about a month. One man was killed.

Judge A. H. Featherstone, of the District Court at Wallace, Idaho, has ruled in favor of A. C. Frost in his suit against Coeur d'Alenes Mines Co. Frost alleged that he held 175,000 shares of the company's stock in his name, which was issued to him as "fully paid and nonassessable." He refused to pay two 2-cent assessments levied by the company after its articles of incorporation had been amended to make the stock assessable.

In the meantime, other mining in the district has continued much as before. This includes the Sunshine, which has not lessened its production since the Government reduced the price of silver; the Day operations; the Jack Waite, and numerous development enterprises in the silver belt between the Sunshine mine and Wallace, Idaho.

—■—

Owl Creek Ceases Operations

The Owl Creek Coal Co., Gebo, Wyo., permanently ceased all operations on February 1, according to a recent announcement by R. J. Ireland, Jr., president of the organization.

—■—

Advertisers to Meet in Cleveland

The National Industrial Advertisers Association will hold its Sixteenth Annual Conference in Cleveland, Ohio, September 21-23, it has been announced by Stanley Kniseley, advertising manager of Republic Steel Corporation, who, as vice president of the Association, heads its committee for conference program and arrangements.

Last September the Association surpassed all its former attendance records with a registration of almost 800 at the Edgewater Beach Hotel, in Chicago.

F. O. Wyse, advertising manager of Bucyrus-Erie Co., South Milwaukee, who at that meeting was elected N. I. A. A. president for the current year, characterized the whole year of 1937 as the biggest year of growth and expansion of activities in the Association's history, since its formation in 1922.

—■—

Steel Industry Equipment Expenditures

Steel companies will spend at least $165,000,000 in 1938 for new equipment and construction, according to reports received by the American Iron & Steel Institute from 120 companies comprising more than 90 percent of the total capacity of the industry.

Announcement of the expected expenditure of steel companies in 1938 for expanding and improving their properties raises the total spent or to be spent for such purposes in the four years 1935-1938, inclusive, to over $840,000,000. Of this sum, about $140,000,000 was spent in 1935; $316,000,000 in 1936, and $320,000,000 in 1937.

It is possible that the 1938 expenditures may exceed the $165,000,000 figure, since a number of companies indicated in their statements that expenditures might be increased if business conditions improved sufficiently, and if there is an early revision of the provisions of tax laws which now discourage the use of earnings for such use.

—■—

Smoke Abatement

According to a dispatch from Salt Lake City, classes were started there January 17 for 800 men and women who wish to know how to keep the home fires burning—without smoke. William L. Butler, chief engineer for

the city's Smoke Abatement Bureau, predicted that the students would learn their lessons so well that Salt Lake City's smoke pall would be reduced by at least 50 percent.

Butte Highlands at Capacity

Butte Highlands Mining Co. shipped two gold bricks in January. The first returned $9,600, and the second nearly $11,000, according to W. S. Norman, of Spokane, Wash., president of the company. Mr. Norman says the cost of production is approximately $6.50 a ton, leaving a good profit over all. Production since November 2, to February 1, was nearly $50,000. The mill is running at its full 50-ton capacity, which will be enlarged soon. The property is near Butte, Mont., and the company is a Spokane corporation.

Marietta gold mine in Montana, controlled by Spokane interests, is shipping gold bullion, according to John Platts, engineer. He says the company can make good money on $10 ore. He reports that at the face of the 400 drift, a channel sample across 5 ft. carries $20.30 in gold and $3.80 in silver. Four channel cuts across a new stope ran $15.05, with values increasing.

Little Blackfoot Queen mine, near Elliston, Mont., reports ore opened in a raise in the Flora vein and the Glenna vein cut by a lower tunnel. The management hopes to have enough commercial ore developed to warrant installation of a small mill this summer.

Symposium on Significance of Tests of Coal

This symposium, published by the American Society for Testing Materials, gives in convenient form detailed discussions of the meaning of the results of tests of coal, through six extensive technical papers prepared by outstanding authorities. In addition to the papers, there is considerable discussion by other technologists. Following the paper on interpretation of laboratory coal tests—proximate analysis and calorific value—there is discussion of the significance of sulphur in coal and also the significance of ash softening temperature and ash composition in the utilization of coal. Laboratory tests relating to caking, plastic, gas- and coke-making properties of bituminous coals and the significance of friability and size stability tests on coal are covered. Pulverizer performance as affected by grindability of coal and other factors forms the subject of the sixth paper. In addition to presenting the viewpoints of leading technologists, the publication also gives a large number of bibliographic references.

Bound in heavy paper cover, copies of this 132-page publication can be obtained at $1 each from A. S. T. M. headquarters, 260 S. Broad Street, Philadelphia, Pa.

Sunshine Production Gains

The Sunshine Mining Co. showed a net profit for 1937 of $5,401,457, according to the company's preliminary statement. These earnings are after deductions for depreciation, Federal and state income taxes and other charges, and are equivalent to $3.63 a share on the 1,488,821 shares of 10-cent par capital stock. For 1936 the company reported a net profit of $3,909,074, or $2.62 a share.

Production of silver in the last three months of 1937 was 3,062,841 oz., an increase of 8.1 percent over the previous quarter. Total tonnage milled for the period was 79,610 tons, a gain of 32.7 percent over the third quarter of 1937. The mill operated at an average rate of 900 tons per day in November and December. Total tonnage milled last year was 15.6 percent above that of 1936. Silver recovery during 1937 showed an increase of 25.1 percent over the year before.

Galloway Coal Company Now Producing

The Galloway Coal Co. is now marketing coal from its new Hope mine, operating on the Black Creek seam near Carbon Hill, Walker County, Ala. The mine will have a potential capacity of 1,000 tons per day, which will be attained as justified by market requirements.

Production of Black Creek coal in the district is relatively light as compared with Cahaba, and the market is being maintained in a favorable position.

Outside The President's Office

—Wilkes-Barre Times Leader.

COURT OF APPEALS ENJOINS PRICE FIXING ON RAILROAD COAL

THE National Bituminous Coal Commission received another stinging blow from the hands of the courts, when on February 11 the United States Court of Appeals for the District of Columbia granted a temporary injunction to 209 major railroads, three coal companies and the city of Cleveland against application of minimum coal prices so far as it affects them.

Just a few days prior to this decision, the Federal Circuit Court of Appeals in New York City, at the request of the Carter Coal Company, had temporarily suspended the minimum price on pea-sized coal shipped from southern West Virginia to New York Harbor.

The order setting aside the prices on railroad coal was signed by Justices Harold M. Stephens, Justin Miller and Henry W. Edgerton, all appointees of President Roosevelt.

The court's decision said allegations by complainants and concessions by the Commission made it appear that minimum-price orders were issued and made effective "without notice of hearing, without affording a hearing to interested parties, and that if the orders are invalid, they (the complainants) are suffering irreparable and continuing damage." Considering these circumstances, the court declared denials of temporary relief would be "extraordinary" unless the ultimate right of review by the court, which the railroads claim, is clearly without legal foundation.

The railroads achieved a status of "aggrieved parties" under the section of the Guffey Act which permits appeals from orders to the Court of Appeals by filing a petition with the Commission requesting suspension and review of minimum price orders. The Association of American Railroads, the American Short Line Railroad Association, the members of both associations and the Consumers Counsel signed the petition to the Commission.

The court's opinion also concerned the petitions of the Saxton Coal Mining Company, the Enos Coal Mining Company and the St. Louis and O'Fallon Coal Company, all of which sell large tonnages to railroads. The court also suspended minimum prices for coal bought by the City of Cleveland, noting, however, that its order applied solely to coal sold to the city government and did not include other consumers in Cleveland.

The decision of the court came during the midst of minimum price hearings being conducted by the Commission, after the Consumers Council had successfully forced the Commission to produce the data from which the price structure was fixed.

Shortly after the petition of the railroads was acted upon, some 3,000 New York companies, members of the Associated Industries of New York State, requested via formal petition the Federal Court of Appeals of New York to nullify minimum prices for New York State. Allegations of these concerns were similar to those of the railroads and the coal companies, their petition contending that they were deprived of due process of law by the Commission's price fixing procedure in that interested parties were denied the opportunity of a hearing.

Immediately after the issuance of the court's opinion, officials of the Coal Commission called into executive conference representatives of the Department of Justice, the industry, and United Mine Workers to discuss the question of suspending all minimum prices temporarily. No action was taken at this conference, but on February 14, the Commission, after awaiting the reactions of the industry to the decision, issued a statement denying that suspension of all minimum prices was contemplated.

In this statement, which the Commission indicated was made to correct unsupported conjectures about the status of the Bituminous Coal Act and minimum prices, Chairman Hosford said in part:

"At the outset let me make it clear beyond a shadow of doubt that

"1. The Commission has not suspended its orders establishing marketing rules and regulations and minimum prices.

"2. All such regulations and minimum prices, therefore, remain in full force and effect except where a court of competent jurisdiction has intervened, and even then regulations and minimum prices are suspended only

—*Sphere Photo.*

National Bituminous Coal Commissioners. Standing (left to right): C. E. Smith, P. E. Greenlee, W. H. Maloney, and Percy Tetlow. Seated: Thomas S. Haymond, Chairman C. F. Hosford, Jr., and John C. Lewis.

to the extent specifically directed in a court order.

"3. Confident in the knowledge that it did not act arbitrarily or capriciously in effectuating the mandates of the law, the Commission has no intention of suspending the regulations and price schedules it established after many months of hard work, careful studies, and under the guidance of competent legal counsel.

"It was inevitable that a new law entering the field of industry regulation would be severely tested in the courts by interests whose depressive tactics had forced the government to resort to regulation. A number of suits are now pending in court against the minimum price schedules, but to date only the following temporary judicial orders have been entered: The Court of Appeals for the Second Circuit at New York has required the Commission to keep in effect temporarily, for the sole benefit of the Carter Coal Company, a special price on Olga pea coal consigned to the New York market. The United States Court of Appeals for the District of Columbia, in a suit brought through the Association of American Railroads, has temporarily enjoined us from penalizing code members who sell coal to the railroads at less than the minimum prices established by the Commission. The same court has entered a similar order upon coals purchased by the City of Cleveland.

"I am informed that a petition may be filed with the Circuit Court here requesting suspension of all minimum prices established by the Commission. Such a petition will be vigorously opposed by the Commission. Indeed, we will continue to oppose, through proper legal proceedings, all efforts to have our regulatory orders invalidated by the courts upon technical grounds.

"In the meantime, every order of the Commission remains in full force and effect, except those which are enjoined by a court of competent jurisdiction."

However, collapse of the entire price structure was threatened when Allan Coe, attorney for the Consumers Counsel, stated that he would ask for a court order suspending the entire minimum price schedule unless the Commission ordered the suspension. His plea basically was that it was "manifestly unfair" to preserve some minimums when the Court had already thrown out others. "Unnecessary expense" in the filing of court petitions would be saved consumers, he added, with the issuance of a complete abolition order.

Commissioner Hosford postponed hearings on the petitions of New York City and several companies until March 7 at the request of the Consumers Counsel, who asked for more time to prepare evidence. In addition, all hearings scheduled for a two week period following the decision were temporarily postponed.

The atmosphere at the Commission is reminiscent of those days prior to the Supreme Court's invalidation of the first Guffey Act back in May, 1936. Whether or not the Commission faces an attack upon the entire question of price-fixing at this time is questionable. No petition to any court as yet has charged that the Bituminous Coal Act of 1937 is drawn along unconstitutional lines. But the Carter Coal Company bids fair to again become the bell-weather in leading the Guffey Act through the portals of the highest court in the land. Carter Coal is asking the New York Circuit Court of Appeals to suspend all prices applying to the company on the ground that sufficient hearings were not held; the Commission contends that the law does not require hearings before price-fixing. Upon this question will hinge the arguments before the bench. A decision favoring either the Carter Coal Company or the Commission would eventually wind up in the Supreme Court of the United States.

The case before the Circuit Court will be continued shortly. Observers believe that Carter will also attack the Act upon the grounds that the coal industry is not directly in interstate commerce and therefore not subject to provisions of the commerce clause or general welfare clause of the constitution.

As this issue of the JOURNAL goes to press, the price structure is in an extremely precarious situation. The District Court of Appeals handed down an order on February 21 suspending the prices of 1,462 members of the Associated Industries of New York State Incorporated. All members of the Associated were listed in the order. Many of them have organizations which spread to all parts of the United States.

Late developments in the situation include:

The city of Atlanta, Ga., asked the Court of Appeals for an order similar to that obtained by the Associated Industries of New York state.

The District of Columbia Court of Appeals set a hearing for February 23 in the case of a similar petition by the Indiana Gas and Chemical Corp., of Terre Haute, Ind.

The Federal District Court dismissed a similar suit by the city of Chicago on the grounds that it lacked jurisdiction.

Editor's Note: On February 23 the Commission made public a resolution revoking all minimum price schedules and marketing rules, effective 11:59 p. m., February 25. The Commission will proceed immediately to the reestablishment of these prices and regulations to meet objections raised in the foregoing litigation. The complete resolution may be found on page 41.

Nevada Miners Meet

J. C. Kinnear, general manager of the Nevada Consolidated Copper Corporation, was reelected president of the Nevada Mine Operators' Association at its twenty-fifth annual meeting held at the office of Henry M. Rives, secretary and treasurer.

H. A. Johnson was named as first vice president; E. A. Julian, second vice president; and Henry M. Rives, secretary-treasurer, being reelected for the twenty-fourth consecutive time.

The following executive board was chosen for the coming year: J. C. Kinnear; H. A. Johnson, superintendent of the Tonopah Mining Co.; E. A. Julian, vice president of the Goldfield Cons. Mines Exploration Co.; Nolde H. Getchell, vice president and manager of the Getchell Mine, Inc.; W. H. Blackburn, manager of the Treadwell-Yukon Mining Co.; F. E. Huffer, auditor of the Nevada Consolidated Copper Corporation; L. D. Gordon, general manager, Penelas Mining Co.; Frederick E. Gray, general manager of Desert Silver, Inc.; and Ott F. Heizer, general manager of the Nevada-Massachusetts Co.

Carson Protests Rate Increase

In a brief, so short it constitutes a record, John Carson, Consumers' Counsel under the Bituminous Coal Act of 1937, told the Interstate Commerce Commission February 5 that only $6,000,000 of the $40,000,000 asked of soft coal consumers in in-

creased freight rates would go to railroads which really need the money.

To divide $6,000,000 among 55 roads in need of increased revenue, soft coal consumers must pay annually $34,000,000 to 65 roads which enjoyed a net profit exceeding $175,000,000 over all fixed charges in the first nine months of 1937, Carson pointed out.

The bituminous coal consumer would pay the three prosperous Pocahontas carriers alone more money in a year than all the 55 needy roads together would receive in 18 months. The Pocahontas carriers obtained another $6,000,000 when the Interstate Commerce Commission temporarily increased coal rates last October, a result which the Commission at that time declared "shocked the conscience."

The brief, filed by Donald Gallagher, of Mr. Carson's legal staff, asks the Commission "promptly and unqualifiedly" to deny increases on bituminous coal rates. Illustrating the situation in the eastern division where the bulk of the increases would be granted, the brief declares that "In other words, in order that needy roads in the Eastern District will get $1,793,507, coal consumers must pay $19,651,711 to roads which have no deficit and are not in need of additional revenue. Not one needy road in this district will get as much as 2 percent of the district increases. This is like a rich promoter of a scheme to raise funds for charity, taking 91.6 percent of the funds raised."

Spray Nozzle For Settling Fine Dust

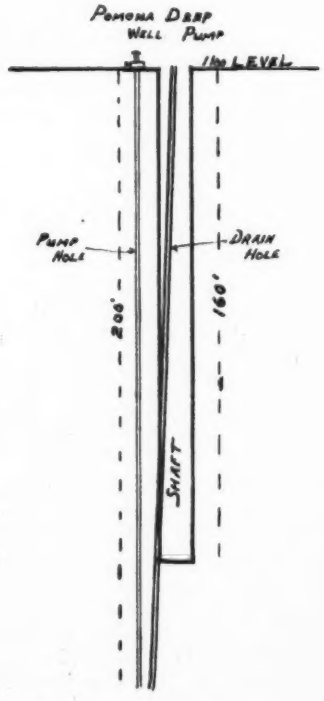
An effective atomizing-spray nozzle for settling fine particles of dust created underground through mining operations has been devised by Frank Cuddeback, mining engineer for the Eagle-Picher Mining & Smelting Co. in the Tri-State District.

The device consists of two valves, connected with short lengths of pipe nipples at right angles, and a piece of pipe several inches in length as a nozzle. Water is introduced through one of the valves ahead of the other valve, through which air pressure from an underground air line is controlled. All the fittings are of ½ in. size.

In operation the nozzle sends out a fine spray several feet in width and height to a distance of from 25 to 75 ft., according to the area desired to be wet down. The sprays are being used in all the company mines where slusher loading is being practiced.

Drill Holes For Drainage in Shaft Sinking

Standard Silver-Lead Mining Co., of Spokane, Wash., has a rather unusual shaft-sinking operation at its Jay Gould mine near Wilborn, Mont. It is planned to drain the shaft site of water before sinking commences, eliminating the necessity for installation of pumping equipment within the shaft area. Two 10-in. holes will be sunk 200 ft., although the shaft will only be 160 ft. The first hole (see sketch) will be drilled 6 ft. outside the shaft area and will be vertical. A turbine pump will be installed in this hole, with pumping mechanism permanently located at the top, thereby eliminating danger of damage to the motor by flooding. This also will afford additional space in the shaft itself. After the shaft is sunk, this pump will serve as a station pump to drain the lowest level.



The shaft will be 11 ft. long, with two compartments. The second hole starts at the center of the shaft area and 11 ft. from the first hole. It will be drilled toward the vertical hole on a 2° incline, and will reach the bottom about 3 ft. from the bottom of the first hole. The bottom of the two holes will be connected by "springing." By this arrangement the water will flow down the inclined hole, draining the shaft area, and then be pumped out the first hole. This shaft is to be sunk from the 1,100-ft. level. By this arrangement digging will be done in dry ground.

January Anthracite Output Jumps

The anthracite industry is off to a flying start in 1938, according to production figures compiled by the Anthracite Institute.

Production for January this year was estimated at 4,575,000 tons, compared with 3,832,000 tons for the first month in 1937. Low temperatures that prevailed during the latter part of the month were largely responsible for the increase.

Freeport Opens Hospital

Freeport Sulphur Co. will open a modern hospital in Plaquemines Parish, Louisiana, some time in March. This is the first unit in the $300,000 building construction program undertaken there when assurance was given by the Louisiana State Board of Commerce and Industry that action is to be taken at the May session of the legislature to adjust the disparity between the $2 per ton Louisiana tax on sulphur and the $1.03 per ton Texas levy.

Anthracite Engineers Meet

The winter meeting of the Anthracite Section of the American Institute of Mining and Metallurgical Engineers was held in Wilkes-Barre, Pa., January 12. With A. B. Jessup, of Lancaster, Chairman of the Anthracite Section, presiding at the meeting, engineers from all parts of the hard coal field heard an address by Dr. Arno C. Fieldner, Chief of the Technologic Branch of the United States Bureau of Mines, Washington. An optimistic future for coal was predicted by Dr. Fieldner who said in part:

"Coal will continue to be the prin-

cipal fuel used for the generation of public-utility and major industrial power. Shortage of our domestic supply of oil may begin within 10 or 20 years while coal will last for hundreds and possibly thousands of years. As the years pass, coal will gradually displace oil because the latter will increase in price.

"While technological improvements may tend to reduce the consumption of coal, there is the possibility of an increasing demand for energy and decreasing supply of cheap residual oil which will obviously increase the amount of coal consumed for power purposes. Tomorrow's power and central heating plant will burn any kind of coal completely and efficiently. There will be no smoke, no dust, and no sulfurous gases emitted.

"Convenience and uniformity of automatic heating of homes with stoker-fired furnaces will eventually give service at a lower cost than that for oil or gas. Smokeless fuels and automatic furnaces will clear the atmosphere of smoke in the better residential districts."

Virginia City Development

The Marietta Mining & Milling Co. of Spokane, has installed a heavier hoist and other new equipment with which the shaft will be extended to the 500-ft. level at their property in the Virginia City district of Montana. John Platts, of Wallace, Idaho, has been made mining engineer at the property.

Bauxite Production in Marked Gain

Domestic shipments of bauxite in 1937 were the highest recorded since 1923, according to the Bureau of Mines. The high rate of production reflected primarily the record output of virgin aluminum, but consumption in the chemical and abrasive industries also showed marked improvement. Bauxite shipments from United States mines in 1937 totaled 418,000 long tons valued at $2,446,000, an increase of 12 percent in quantity and 11 percent in value over 1936. All of the increase was credited to mines in Arkansas, shipments from Alabama and Georgia registering a slight decline. The average value per ton of all domestic shipments declined from $5.91 per ton in 1936, to $5.85 in 1937.

Securities Act

(*Continued from page* 53)

through the efforts of the S. E. C., is getting a run for its money in the stock market for the first time in American history.

With the banks and insurance companies and other institutions holding most of the stable stocks and bonds, the public will probably turn to the more speculative industries such as primary mining shares, which also will be under the jurisdiction of the S. E. C. and in which the public will get an honest run for its money.

If the public does not finance new mining ventures to make new mines as the old ones are depleted the big mining companies will ultimately own all the mining ventures and that is not exactly right from an economic standpoint. The public should participate in these speculative ventures and not be frightened out of them as they are right now.

Public participation in financing the making of new mines is the answer of the mining industry to the late Huey Long's theory of "sharing the wealth."

Roads to Mining Areas

(*Continued from page* 44)

economically practicable to work and the use for the purpose for which the roads were built would not be commenced or would be shortly abandoned, and that deposits that might be minable in a different situation or under different market conditions would be used as a pretext for obtaining contracts to building roads.

"Even if the bill confers authority upon the Secretary to consider all the factors necessary to justify the expenditure of public funds, the bill, if it becomes a law, is difficult of administration, requiring the determination of facts not easy to ascertain certainly, that are subject to controversy and change, and required the Secretary to speculate upon the success of a proposed mining venture, and may result in the expenditure of public funds in private interest, without any compensatory benefits to the public interest.

"The bill further operates to give undue advantage to those having mineral deposits in the forests over others having like deposits similarly situated outside the forests.

"For the reason stated, I do not look with favor on the bill.

"For the reasons set forth in my former report, I am of the opinion that the bill should not be enacted."

Much of this is, of course, the kind of rationalization in which all of us engage when our minds have been made up in advance and we then drag in all possible objections to support our position. Nevertheless, some of the objections would be cogent ones, but do they not apply with equal force to the construction of "farm-to-market" roads, and could one not argue with equal force that unless the farmer's wheat is really needed or unless he can build his own road, then the Federal Government should give him no assistance. But the farmers have more votes than the miners and they squeal with a louder voice!

In my opinion, the most valid objection to Congressman White's proposal is not mentioned at all by Mr. West. This is that one single operator could apply for a road, whereas roads should be built only to assist a camp or a district in which 10 or a dozen operators are actually at work and in position where a passable road is a vital necessity. The introduction by Senator B. K. Wheeler of S. 2450, on May 13 of this year, meets, it seems to me, every legitimate objection which the Department of the Interior might properly raise. It is identical in many respects with the White bills, but makes the provision applicable to "mineralized areas" instead of to individual claims.

Nevertheless, Assistant Secretary West, in a letter to Senator Adams, again recites the objections above quoted from his earlier letter.

Thus the matter rests at present.

The need is obvious. Legislation to meet this need, in part, has been introduced; western senators and congressmen have urged favorable consideration; but until the attitude of the Interior Department can be modified, probably nothing will be done. It is to be hoped the Western Division of the American Mining Congress will see fit to urge a more enlightened and constructive attitude by the Federal Government towards this real need of the western miner.

PERSONALS

F. F. JORGENSEN, production manager of Consolidation Coal Company, Fairmont, W. Va., has just returned from a six-weeks' vacation in Florida, fully recovered from a recent severe attack of pneumonia.

CHARLES F. JACKSON, chief engineer of the mining division, U. S. Bureau of Mines, recently returned to Washington for a day following a three-weeks' trip into Arizona, New Mexico, and Mexico, and immediately set out for a six-weeks' trip to Alaska.

W. G. GREGORY has been named general manager of the activities of the Binkley Coal Company in the territories served by the Kansas City and Minneapolis offices. Mr. Gregory continues as vice president of the corporation. J. F. MALONEY was elected to a vice presidency of the same company, effective February 1, and GREGORY S. DEVINE was promoted to the position of sales manager.

ALLEN W. MORTON has been elected vice president of Koppers Company. Mr. Morton will continue in charge of Koppers American Hammered Piston Ring Division at Baltimore, where he has been general manager.

ROGER O. OSCARSON, president of the Morning Star Mining Company, Danville, Wash., and of the Clubine Comstock Mining Company, Salmo, B. C., was installed as president of the Northwest Mining Association December 27. His term of office formally started January 1, 1938.

Mr. Oscarson, who is actively interested in a number of other successful mining enterprises in the Northwest in addition to those mentioned, has been active for many years in the work of the Northwest Mining Association, serving in various roles as an officer and director of the association and taking part in the work of a number of committees.

J. M. SIAS has been named assistant vice president of the Raw Materials Department of the United States Steel Corporation of Delaware. Mr. Sias began his business career in the auditing department of Carnegie

J. M. SIAS

Steel Company in 1893 and transferred to the company's raw materials department six years later. He went to the New York offices of the United States Steel Corporation of New Jersey as assistant to the vice president, raw materials, in 1909, and in recent years has been assistant to the vice president in charge of operations for the New Jersey corporation.

S. A. SCOTT, president, White Oak Coal Company, Mt. Hope, West Virginia, and family, are vacationing in Bermuda and will return to New York about April 10.

EARL C. ROBERTSON has been named vice president in charge of sales of the Pittsburgh Coal Company, succeeding Hal E. Booth, resigned. Mr. Robertson brings to his new position 25 years of experience in the coal industry. Formerly from Beckley, W. Va., he was active in operating and sales in the southern coal fields, having traveled throughout Virginia and the Carolinas, in addition to being in charge of sales for Raleigh Smokeless Fuel Company, Cincinnati, Ohio, for a period of four years. He has been associated with the Pittsburgh Coal Company as assistant general sales manager for the past 11½ years.

F. S. ELFRED, JR., of Baxter Springs, president of the Evans-Wallower Zinc, Inc., has taken leave of absence as executive head of the company and will spend a larger part of his time at Alton, Ill., in the executive employ of the Western Cartridge Company and its allied branches. FLOYD W. GOOCH, of Joplin, general superintendent of the Evans-Wallower Company, has taken over the position of manager of the company and will be actively in charge of local operations.

CHARLES M. JOHNSON has been made superintendent of the Nos. 1, 2 and 3 Mines of the Leckie Smokeless Coal Company, Anjean, W. Va.

C. F. KECK, formerly safety director of the Jamison Coal and Coke Company, has been appointed general superintendent of the company's operations in Northern West Virginia, with headquarters at Farmington.

JAMES BOYD, formerly assistant eastern district manager, has been appointed eastern district manager of the Westinghouse Electric & Manufacturing Company. As eastern district manager he succeeds H. F. BOE, who has become commercial manager of the company, with offices in Pittsburgh. Mr. Boyd's headquarters will be in New York, the Westinghouse Building, at 150 Broadway.

D. W. WHEATLEY has been appointed superintendent of the Wyoming Mine of the Red Jacket Coal Corporation, Wyoming, W. Va.

PROF. C. K. LEITH, of the University of Wisconsin, will speak over the British Broadcasting Corporation on March 24 in an international broadcast on "The Role of Minerals in the Present World Unrest." The address

DR. C. K. LEITH

will go out from three London stations at 7.10 p. m., Eastern Standard Time. Professor Leith's talk is one of a weekly series on "The Way of Peace," arranged by the British Broadcasting Corporation.

R. L. IRELAND, JR. has been elected president of the Hanna Coal Company of Ohio, with headquarters at Cleveland. In the past Mr. Ireland has been executive vice president of that company.

LAYMAN COURTNEY has been appointed superintendent of the Greenwood No. 2 Mine of the West Virginia Smokeless Coal Company, Larue, W. Va.

W. R. HANDS has been made superintendent of the No. 5 Mine of the Pursglove Gas Coal Company at Pursglove, W. Va.

ANDREW LEITH has returned to his home in Madison, Wis., following a year spent in the Philippines as head of geological work for the Philippine Bureau of Mines. He will shortly take a position with Pickands Mather in Cleveland, Ohio.

H. B. DAVIES has been appointed superintendent of the Rich Run Mine of the Elk River Coal and Lumber Company, Widen, W. Va.

—*Obituaries*—

CHARLES PRESCOTT REES, vice president in charge of mining operations for the Vanadium Corporation of America, and a geologist and mining engineer of wide reputation, died on January 19 at his home in Yonkers, N. Y., at the age of 60. His death was due to pneumonia.

Mr. Rees was born in Pittsburgh, Pa. After studying at the University of Wisconsin, he entered the service of the Minnesota Iron Mining Co. in 1900, and later was employed by the Oliver Mining Co. In 1916 he went to Russia for the American Interna-

CHAS. P. REES

tional Corp. to investigate the iron and steel situation. He also served as geologist and Mexican representative for the Midvale Steel and Ordnance Co.

In 1925 he became associated with the Vanadium Corporation of America as consulting engineer, becoming vice president in 1929. He was also a director of the company.

CHARLES WATERMAN STONE, consulting engineer of the General Electic Company, died in Schenectady February 3 after a long illness at the age of 63. Mr. Stone had been associated with the General Electric Company since 1900, when he took a position in the drafting department. He was active in the affairs of the Radio Corporation of America since its inception, and was named in 1926 assistant to James G. Harboard, then president of RCA and now chairman.

LEONARD TREMAN, SR., for many years associated with the Philadelphia and Reading Coal and Iron Company, and its general northern sales agent for 12 years previous to his retirement, died in Rochester, N. Y., January 23 after a brief illness, at the age of 85.

HARRY C. OWEN, assistant manager of the district sales office of Consolidation Coal Company at Fairmont, W. Va., died suddenly from a heart attack late in January. Mr. Owen had been connected with the Consolidation Coal Company for the past ten years, and had joined the sales department of that organization in 1928.

A. BRUCE RITCHIE, general superintendent of the Consolidated Mining and Smelting Company of Canada, Ltd., at Kimberley, B. C., was instantly killed December 27 by a fall of rock loosened by blasting in another part of the mine. William Lindsay, his assistant, who was with Mr. Ritchie at the time, suffered minor injuries. At the time of the accident the two men were on a tour of inspection in an old section of the huge operation.

FOREST RUTHERFORD, consulting engineer in mining and metallurgy, died at New York Hospital February 1 after a short illness. Mr. Rutherford was born March 24, 1871, in Montreal, Canada, and graduated from McGill University with the degree of B.A.Sc. in mining engineering.

In following his chosen profession he spent many years with the major mining operating companies in the middle and far West of the United States and in Mexico with conspicuous success. He established a business in New York City in 1917 as consulting engineer in mining and metallurgy and successfully continued in such capacity.

With the MANUFACTURERS

Pressure Lubricator

On bearings, gears, and other moving parts of machinery where oil is needed, the Acco-Morrow pressure lubricator, recently announced by the American Chain & Cable Co., Inc., solves a perplexing and costly industrial problem by supplying lubrication at pressure up to 1,000 lb.

Such pressure lubrication flushes out grit and dirt from a machine and at the same time forces oil into bearings.

The "Oilingseal" tip, made of compressible composition, is an important feature of the new lubricator. This tip makes a pressure-tight contact on the top edge of any common oil hole

and practically all sizes and types of cups and oil-hole covers in general use. No special fittings are needed.

Four types of these lubricators supplying pressure over 1,000 lb., and six other type models supplying pressure over 500 lb. are now being manufactured. Literature describing this equipment in detail may be had by addressing your inquiry to American Chain & Cable Co., Inc, York, Pa.

Hendrick Mfg. Co. Moves

Hendrick Manufacturing Co., makers of perforated metals, Mitco open steel flooring, decorative grilles, and other products, have announced a change in the location of the Pittsburgh office. The new address is Room 744, Gulf Building.

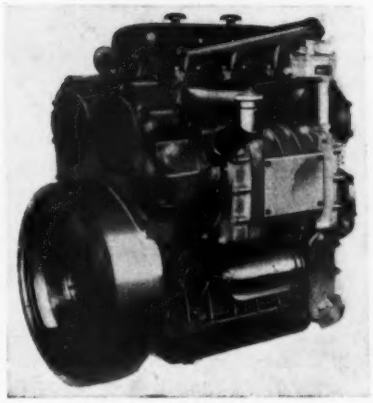
Small Diesels by General Motors

General Motors announced on January 19 its plans for the establishment, for the first time, of mass production and sale of small, lightweight, two-cycle Diesel engines for all purposes.

R. K. Evans, vice president of General Motors in charge of Diesel development, announced that the new engines are "little brothers" of the large General Motors Diesels that now power famous main-line Diesel high-speed passenger trains which have rolled up a total of more than 8,000,000 miles on American railroads.

Until now, General Motors has limited its Diesel activities to the building of larger two-cycle engines of from 600 to 1,200 hp. The new engines extend this line in varying sizes down to a one-cylinder, 22-hp. model which promises to make history in the low-power field. The complete line of General Motors Diesel engines, ranging from 22 to 1,200 hp., will be built in such a manner that additional horsepower can easily be obtained by the use of additional units.

The engines will be built in three General Motors factories at Detroit, Cleveland, and LaGrange, Ill. The new factory of the Detroit Diesel engine division was placed in operation simultaneously with General Motors announcement of its enlarged Diesel activities. The Detroit factory will produce the smaller engines with from 22 to 160 hp. and from one to six cylinders.



G. M. Model 3-71 diesel engine.

The announcement followed 10 years of research and development by engineers of General Motors Corporation, the Winton Engine Corporation, and Electro - Motive Corporation, under the direction and supervision of Charles F. Kettering, vice president of General Motors in charge of research.

Slushing Accessories

Two new accessories of the scraper or "slushing" process of loading ore underground have been put on the market by Harley A. Coy, of Mascot, Tenn. These are designated as the Mascot split-hook sheave, and the Mascot "Saflex Wedgeye."

As its name indicates, the sheave has a split or divided hook that can be opened on hinges at its base. This makes it possible to place the slushing cable over the sheave wheel without removing bolts or pins. Considerable time is saved by this, and as no parts can be lost or mislaid there can be no delays while they are being found. As broken ropes are often tied instead of being spliced, the wheel has been designed so that knots will pass over it. The sheave is riveted into a rigid unit, which prevents return ropes from twisting and sawing as they can do when sheaves with swivel-type hooks

are used. Of cast-steel construction, the sheave has been strengthened where failures usually occur. Either a sealed, greased-for-life ball bearing or a bronze bearing arranged for Alemite greasing can be had.

The "Saflex Wedgeye" is a quick and effective means of providing an anchorage for the sheave wheel. It consists of a short length of wire rope cable, to one end of which is fastened the eye, and to the other a cylindrical metal part. The latter is inserted in a hole drilled in the rock and is secured fast by driving in beside it a metal wedge that fits against a tapered flat surface on one side of the cylinder.

All bending and shock stresses are taken up in the short length of rope, which lessens the chance of the wedge working loose. As this rope can be of any length desired, anchor holes may be drilled well back of the working face, in firm ground. This flexible mooring also permits the sheave to adjust itself to the angle of the pull line, thus reducing wear on the cable.

Mr. Coy, who developed these appliances, is superintendent of mines for the American Zinc Co. Both products have been given thorough tests in actual service in that concern's properties at Mascot, and it was because of their success there that it was decided to make them available to other mining companies.

Moffatt Named U. S. Steel Advertising Director

The United States Steel Corp. of Delaware announced the appointment, effective immediately, of Charles R. Moffatt as director of advertising, under C. V. McKaig, vice president.

Mr. Moffatt has been advertising manager of Carnegie-Illinois Steel Corp. since organization of that company October 1, 1935, and director of exhibits of the United States Steel Corp. since July 1, 1935.

He moves into his new position after 31 years of service with subsidiary companies, beginning in 1907 in the accounting department of the Illinois Steel Co. at Chicago. He assumed charge of sales statistics and advertising of that company in 1919 and remained in the position until his 1935 appointment.

The new office combining advertising and exhibit activities will be located at 436 Seventh Avenue, Pittsburgh.

Respirator

The Dustfoe respirator—a newly developed respirator (bearing U. S. Bureau of Mines approval No. 2115), weighing less than 3¼ oz., providing full protection with utmost comfort under the most severe working conditions, has just been placed on the market by the Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa.

The Dustfoe respirator allows full vision in any direction, does not interfere with the wearing of goggles, spectacles, welding helmets, or headcoverings of any kind and may be worn comfortably for long working periods. All metal parts are made of aluminum, are quickly replaced, and may be thoroughly sterilized at any time, including the easy fitting, soft rubber face cushion.

A complete description and illustration of this new respirator may be found in Bulletin No. CM-1, copy of which can be had by writing this magazine or the manufacturer direct.

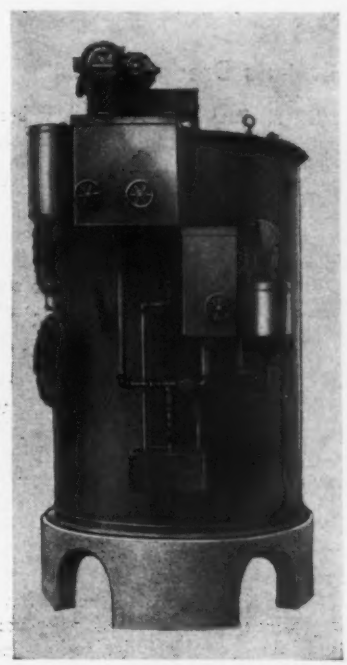
New Clarifier Announced

Every industrial engineer who has settling problems in connection with water, chemicals, solutions or mixtures, will be interested in this new Seip Multi-tray Clarifier, which is designed and built on an entirely new principle, that of upward sludge filtration by means of periphery intake channel.

As compared with center intake channels, common to most settlers, the intake in the new Seip is ten times as large, which reduces proportionately the rate of speed of incoming liquids and results in minimum disturbance to the liquid.

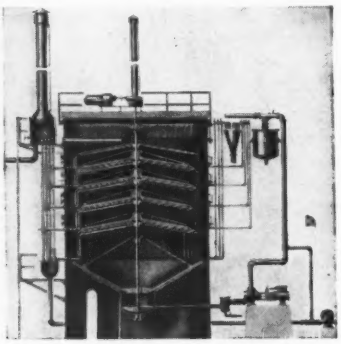
The Seip clarifier consists of one, two or as many as seven round, inverted trays, supported by brackets attached to inner side of tank shell.

The space within each tray forms a settling chamber and if the solution to be clarified is thick and has solids in suspension, these solids collect on the top of each tray (which acts as a bottom for the settling chamber



above it) and function as an entangling medium for light-weight particles which would not otherwise quickly settle. This produces a clearer liquid.

Immediately above each tray there is a set of movable scrapers to carry away the surplus sludge. These scrapers are operated from a central shaft, the speed of which can be changed to suit specific gravity of sludge encountered and the depth of sludge desired.



Cross section of Seip clarifier

A liquid draw-off in the top of each chamber, located near the central shaft and as far as possible from the intake pipes, allows longer time for settling and the production of a clearer, cleaner liquid.

The Graver Tank & Mfg. Co., Inc., with plants at East Chicago, Ind., and Catasauqua, Pa., are marketing this device.

Rivetless Dredge Bucket

U. S. Patent 2090563 has been granted the American Manganese Steel Division of the American Brake Shoe & Foundry Co. on the Whistler design rivetless dredge bucket, which now makes available a renewable lip dredge bucket with one-piece bucket rigidity.

This is accomplished by seating and securing the lip so that it is interlocked with the body, actually adding to the strength of the whole assembled unit. Semicircular horns cast integral with the two ends of the lip fit into correspondingly shaped recesses in the body. A flange on the lip fitting down snugly over the hood rim prevents sidesway and lip distortion, and affords a positive locking device and a perfect non-obstructing union between body and lips.

Amsco rivetless dredge buckets have long since proved satisfactory on partial and complete dredge-line installations. They are cutting operating costs because new lips can be installed quickly and cheaply. They are increasing production because when the lips finally have become worn, a new lip can be installed on a bucket in from three to five minutes. Body shape plus the long service life assured by manganese steel are important features in the new rivetless bucket making for more profitable dredging and placer-mining operation. A new bulletin giving further details is free upon request.

O. F. STROMAN

C. B. STAINBACK

Westinghouse Promotes Sales Executives

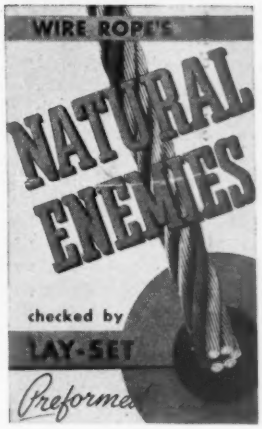
Westinghouse Electric & Manufacturing Co. recently announced the following promotions in their industrial sales department:

O. F. Stroman, since 1931 manager of the industrial sales department, has been appointed assistant to the vice president in charge of sales. C. B. Stainback, formerly assistant manager of the industrial sales department, becomes manager. Bernard Lester, also a former assistant manager, has been made manager of a new created resale department.

Mr. Stroman and Mr. Lester will make their headquarters in the Pittsburgh offices of the company in the Union Bank Building. Mr. Stainback's office will be in the East Pittsburgh works.

Informative Book

In radio programs advertisers have found that the more subtle the advertising "commercials"—the more effective their expenditure. Something of that radio technic has been applied to the new book "WIRE ROPE'S NATURAL ENEMIES" recently published by the Hazard Wire Rope Di-



vision of the American Chain and Cable Company, Inc., Wilkes-Barre, Pa. More than a mere advertisement for a particular brand of wire rope, the book is a sound, constructive treatise on the many things that wear out rope and how either to avoid them or minimize their effect. Sheaves, reverse bends, kinking, whipping, abrasion and many other "enemies" of wire rope are discussed separately and in simple, non-technical language. Profusely illustrated with interesting and informative pictures, this 28-page pocket-size book is a valuable addition to industrial literature.

Electric Supply Warehouse

The Mosebach Electric & Supply Co., Pittsburgh, Pa., announces the establishment of warehouse facilities at 1315 Hansford Street, Charleston, W. Va. Thomas Angell is district sales manager in charge.

Safety Hats

Upon completion of the rigid safety tests of the Coal Mining Section, Pennsylvania Compensation Rating and Inspection Bureau, approval has been given by this body to all models of the new Hard Boiled Tuff-Nut hats and caps.

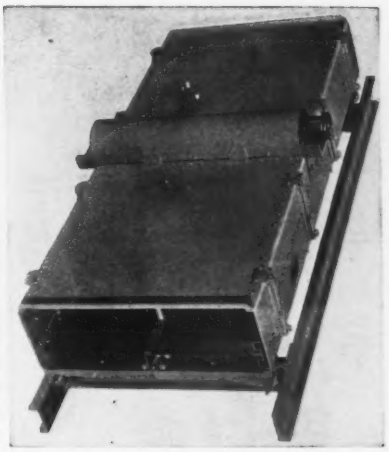
Seven features are claimed by the manufacturer of the Tuff-Nut, E. D. Bullard Company. It is ventilated all around the crown. The crown is non-brittle and moisture-proof. Each size crown fits three different sizes of sweatbands, thus reducing the stock of crowns needed to keep complete sizes. The sweatband snaps in and out; no lacing. Combined with exceptionally light weight, the new Tuff-Nut gives rugged head protection.

Catalog is available from E. D. Bullard Company, 275 Eighth Street, San Francisco, or from any Bullard office or distributor.

New Line of Enclosed Screens

Dust-tight top and bottom enclosures are the features of several new vibrating screen models that have been added to the line produced by the Universal Vibrating Screen Co., Racine, Wis.

Hinged top panels are opened easily and quickly. The enclosures are so constructed that the machine operates as quietly as the standard open types made by the same concern.

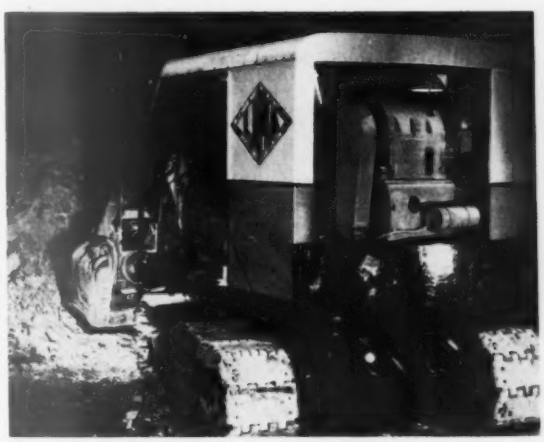


New enclosed screen

Koppers Acquires Valve Rights

Koppers Co. has announced that it has acquired exclusive rights to the manufacture and sale of the line of valves and other waterworks and sewage equipment formerly produced by the Michigan Valve and Foundry Division of the Timken-Detroit Axle Co.

Production of the line will not be interrupted. It will be produced



Operation of this electric shovel in a limestone quarry with an 11-ft. roof was made possible by a gearmotor which powers its motions, including the driving of the boom. Equipped with a Westinghouse motor, it is claimed it can shovel limestone nearly a third faster than a compressed-air shovel

under its present trade name by Koppers Co.'s Western Gas Division, Fort Wayne, Ind., and will be added to its "Western" line of valves, sluice gates, and similar equipment, according to R. A. Wickes, general manager of the division.

Lowers Installation Costs

A vertical 2¾-in. diamond-drilled hole, running 500 ft. to meet a 6,000-ft. tunnel, cut more than $4,000 from the previously estimated power-transmission expenses of the

Terminal pole of transmission line to underground substation

Lava Gap gold mine, located near Grass Valley, Calif. The estimated cost of installing a power-transmission system for the 150-hp. double-drum hoist, the air compressor, and the two pumps—which were stationed far down in the tunnel in order to sink the shaft—had been $7,000, a cost involving power transmission through the entire tunnel length. But, with the small hole drilled, a three-conductor, lead-covered, steel-armored General Electric cable was dropped direct to the substation at an overall cost of $2,575.

This installation is expected to produce further savings, as it is free from the wear it would have incurred, due to constant transportation of ore, if run through the tunnel itself.

CATALOGS and BULLETINS

• CABLES. *Anaconda Wire & Cable Co.*, 25 Broadway, New York City. Publication No. C-40 discusses the application, construction, and physical properties of Parkway cable, together with information relating to current carrying capacities and cable-jointing instructions. 16 pages.

• CAR COUPLERS. *Ohio Brass Co.*, Mansfield, Ohio. Bulletin No. 646-AM gives complete operating and technical description of the new O-B automatic mine and industrial car coupler. Illustrations show design and construction of coupler, types of anchorage construction, and operating views. 12 pages.

• CIRCUIT BREAKERS. *General Electric Co.*, Schenectady, N. Y. Folder GEA-2450A describes the construction, operation, and use of Type AE-1 air circuit breakers. These are particularly useful in protecting low-voltage electric circuits in central station, industrial and building equipment service. 12 pages.

• DIESEL ENGINES. *Caterpillar Tractor Co.*, Peoria, Ill. Form 4253, a booklet entitled "Caterpillar Diesel Engines" presents maximum and rated performance curves of the seven current sizes of caterpillar Diesel engines, together with a brief resume of the outstanding features of these engines. The booklet is profusely illustrated with model shots and explanatory mechanical cutaways that clearly explain the various working parts of the engines. 32 pages.

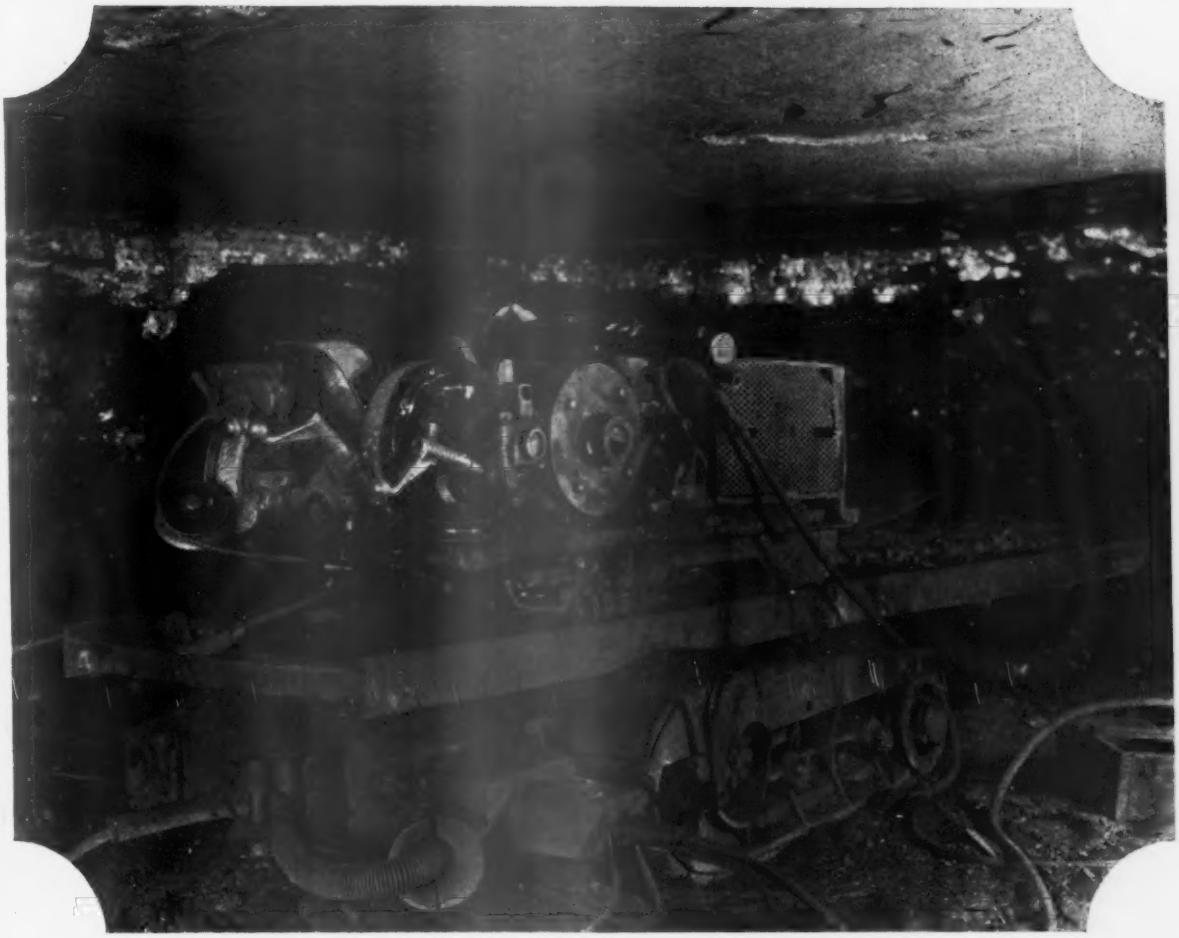
• DRILL RIG. *Sullivan Machinery Co.*, Claremont, N. H. Bulletin 87-B describes the construction and use of the new UW-161 featherweight drill rig. Numerous advantages of the new type of equipment claimed by the company are simplicity, economy, durability, and portability. 4 pages.

• FILTER CLOTH. *Filter Media Corporation*, Irvington-on-Hudson, New York. Leaflet "Fiberglas Filter Media" describes various types of the 100 percent glass fiber now being marketed for industrial filtration and clarification. 4 pages.

• LIGHTING EQUIPMENT. *Westinghouse Electric & Manufacturing Co.*, East Pittsburgh, Pa. Folder 8408 describes the construction and application of the Millite lighting unit for heavy industries. Also included are various tests illustrating the ability of the unit to withstand abuse, a table of mounting heights, spacing and resulting footcandle intensities. 4 pages.

• TREATED TIMBER. *The Wood Preserving Corporation*, Koppers Bldg., Pittsburgh, Pa. Illustrated booklet, "Pressure Treated Timber—From the Tree to the Job," describes the necessity for treating timber and the kinds of preservatives employed, pressure processes, preparation of timber before treatment, its economy and uses in industrial plants, coal mines, and various other applications. The booklet is well illustrated with a wide variety of photographs of construction projects employing treated timber. 20 pages.

• TRUCKS. *Marmon-Harrington Co., Inc.*, Indianapolis, Ind. Leaflet describes different models of the new Marmon - Harrington all-wheel-drive Ford V-8 commercial and passenger cars. 4 pages.



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